MAY 12 1993

Station # 12

ENGINEERING DATA TRANSMITTAL

1. EDT 142903

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Record File	Environmental Restoration Engineering	N/A
5. Proj./Prog./Dept./Div.:	**6. Cog. Engr.:**	**7. Purchase Order No.:**
100-NR-1 Remedial Investigation	A. D. Krug	N/A
8. Originator Remarks: Release to Distribution		**9. Equip./Component No.:** N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		**12. Major Assm. Dwg. No.:** N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

MAY 1993 RECEIVED EDMC

9212-6108

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-TI-157		0	Data Validation Report for 100-NR-1 Operable Unit Test Pit	3 Q	1/2	1	

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1/2	1	Cog.Eng. A. D. Krug		5/12/93	H6-02	EDMC (2)		H6-08	~~H4-22~~	3	
1/2	1	Cog. Mgr. R. P. Henckel		5-12-93	H6-02	Central Files (2)			L8-04	3	
1/2	1	QA G. S. Corrigan		5-12-93	H4-16						
		Safety									
		Env.									
						F. Stone			H6-01	3	
						ERC			H6-07	3	

18.	19.	20.	21. DOE APPROVAL (if required) Ltr. No.
A. D. Krug 5-12-93 Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	R. P. Henckel 5-12-93 Cognizant/Project Engineer's Manager / Date	[ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

BD-7400-172-2 (07/91) GEF097

INSTRUCTIONS FOR COMPLETION OF THE ENGINEERING DATA TRANSMITTAL

(USE BLACK INK OR TYPE)

BLOCK	TITLE	
(1)*	EDT	• Enter the assigned EDT number.
(2)	To: (Receiving Organization)	• Enter the individual's name, title of the organization, or entity (e.g., Distribution) that the EDT is being transmitted to.
(3)	From: (Orginating Organization)	• Enter the title of the organization originating and transmitting the EDT.
(4)	Related EDT	• Enter EDT numbers which relate to the data being transmitted.
(5)*	Project/Program/Dept./Div.	• Enter the Project/Program/Department/Division title or Project/Program acronym or Project Number, Work Order Number or Organization Code.
(6)	Cognizant/Project Engineer	• Enter the name of the individual identified as being responsible for coordinating disposition of the EDT.
(7)	Purchase Order No.	• Enter related Purchase Order (P.O.) Number, if available.
(8)*	Originator Remarks	• Enter special or additional comments concerning transmittal, or "Key" retrieval words may be entered.
(9)	Equipment/Component No.	• Enter equipment/component number of affected item, if appropriate.
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(11)	Receiver Remarks	• Enter special or additional comments concerning transmittal.
(12)	Major Assm. Dwg. No.	• Enter applicable drawing number of major assembly, if appropriate.
(13)	Permit/Permit Application No.	• Enter applicable permit or permit application number, if appropriate.
(14)	Required Response Date	• Enter the date a response is required from individuals identified in Block 17 (Signature/Distribution).
(15)*	Data Transmitted	
	(A)* Item Number	• Enter sequential number, beginning with 1, of the information listed on EDT.
	(B)* Document/Drawing No.	• Enter the unique identification number assigned to the document or drawing being transmitted.
	(C)* Sheet No.	• Enter the sheet number of the information being transmitted. If no sheet number, leave blank.
	(D)* Rev. No.	• Enter the revision number of the information being transmitted. If no revision number, leave blank.
	(E) Title or Description of Data Transmitted	• Enter the title of the document or drawing or a brief description of the subject if no title is identified.
	(F) Impact Level	• Enter the appropriate Impact Level (Block 15). Use NA for non-engineering documents.
	(G) Reason for Submittal	• Enter the appropriate code to identify the purpose of the data transmittal (see Block 16).
	(H) Originator Disposition	• Enter the appropriate disposition code (see Block 16).
	(I) Receiver Disposition	• Enter the appropriate disposition code (see Block 16).
(16)	Key	• Number codes used in completion of Blocks 15 (G), (H), and (I), and 17 (G), (H) (Signature/Distribution).
(17)	Signature/Distribution	
	(G) Reason	• Enter the code of the reason for transmittal (Block 16).
	(H) Disposition	• Enter the code for the disposition (Block 16).
	(J) Name	• Enter the signature of the individual completing the Disposition 17 (H) and the Transmittal.
	(L) Date	• Enter date signature is obtained.
	(M) MSIN	• Enter MSIN. Note: If Distribution Sheet is used, show entire distribution (including that indicated on Page 1 of the EDT) on the Distribution Sheet.
(18)	Signature of EDT Originator	• Enter the signature and date of the individual originating the EDT (entered prior to transmittal to Receiving Organization). If the EDT originator is the Cognizant/Project Engineer, sign both Blocks 17 and 18.
(19)	Authorized Representative for Receiving Organization	• Enter the signature and date of the individual identified by the Receiving Organization as authorized to approve disposition of the EDT and acceptance of the data transmitted, as applicable.
(20)*	Cognizant/Project Manager	• Enter the signature and date of the Cognizant/Project Engineer's manager. (This signature is authorization for release.)
(21)	DOE Approval	• Enter DOE approval (if required) by letter number and indicate DOE action.

*Asterisk denote the required minimum items checked by Configuration Documentation prior to release; these are the minimum release requirements.

SUPPORTING DOCUMENT

1. Total Pages 85

2. Title

DATA VALIDATION REPORT FOR THE 100-NR-1 OPERABLE UNIT TEST PIT

3. Number

WHC-SD-EN-TI-157

4. Rev No.

0

5. Key Words

Volatile/Semivolatile organics, pesticide/PCB, inorganics, herbicides, wet chemistry, alpha/gamma spectroscopy, south pond, percolation pond, 120-N-1, 120-N-2, 119-N, 1322-N, 116-N-2, UN-100-N-17

APPROVED FOR PUBLIC RELEASE V. Birkland 5/4/93

6. Author

Name: A. D. Krug

Alan D. Krug 5/4/93

Signature

Organization/Charge Code

81310/PG3EB

7. Abstract

Krug, A. D., 1993, Data Validation Report for the 100-NR-1 Operable Unit Test Pit, WHC-SD-EN-TI-156, Rev. 0, prepared by A. T. Kearney, Inc. for Westinghouse Hanford Company, Richland, Washington.

9. Impact Level 3Q

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC (11)

DATE MAY 12 1993

Station #12

A-6400-073 (11/91) (EF) WEF124

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ACRONYMS

%D	Percent difference
AA	Atomic absorption
BFB	Bromofluorobenzene
BNA	Base/neutral and acid (equivalent to semi-volatiles)
CCV	Continuing calibration verification
CLP	Contract Laboratory Program
CRDL	Contract required detection limit
CRQL	Contract required quantitation limit
DBC	Dibutylchlorendate
DFTPP	Decafluorotriphenylphosphine
DQO	Data quality objectives
EPA	U.S. Environmental Protection Agency
GC/MS	Gas chromatography/mass spectrometry
GC	Gas chromatography
GFAA	Graphite furnace atomic absorption
GPC	Gel permeation chromatography
ICP	Inductively coupled plasma emission spectrometry
ICS	ICP interference check sample
ICV	Initial calibration verification
IDL	Instrument detection limit
MSA	Method of standard addition
MS/MSD	Matrix spike/matrix spike duplicate
PCB	Polychlorinated biphenyl
PEM	Performance evaluation mixture
QA	Quality assurance
QC	Quality control
RF	Response factor
RIC	Reconstructed ion chromatogram
RPD	Relative percent difference
RRF	Relative response factor
RRT	Relative retention time
RSD	Relative standard deviation
RT	Retention time
SDG	Sample delivery group
SOW	Statement of work
TAL	Target analyte list
TCL	Target compound list
TIC	Tentatively identified compounds
TOC	Total organic carbon
TOX	Total organic halides
VOC	Volatile organic compounds

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CONTENTS

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1.0 INTRODUCTION

Since Westinghouse-Hanford has requested that a minimum of 20% of the total number of Sample Delivery Groups must be reported the data from the chemical analysis of twenty-two samples from the 100-NR-1 Operable Unit Groundwater Drilling Remedial Investigation and their related quality assurance samples were reviewed and validated to verify that reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site. The samples were analyzed by Thermo-Analytical Laboratories (TMA) using U.S. Environmental Protection Agency (EPA) CLP protocols.

Sample analyses included:

- Volatile organics
- Semi-volatile organics
- Pesticide/PCB organics
- Inorganics
- General chemical parameters.

The table below lists the Sample Delivery Groups (data packages) that were validated and included in this report.

SDG Package No.	Matrix	No. of Samples Analyzed	Parameters
B07Q52	Soil	11	VOC
B07Q52	Soil	10	BNA, Pest/PCB, Inorganics, Wet Chem
B07Q63	Soil	11	VOC
B07Q63	Soil	10	BNA, Pest/PCB, Inorganics, Wet Chem

All of the data were analyzed by TMA. Data quality was reviewed and analytical results validated using Westinghouse-Hanford procedures and related EPA CLP protocols and guidelines. Data were qualified based upon their quality and the guidance provided by these sources. In instances where the two protocols differed, the Westinghouse-Hanford guidance was followed.

Two sets of field duplicate samples were submitted to TMA as shown below:

B07Q52 ——— B07Q53
B07Q71 ——— B07Q72

Sample results were compared for their accuracy using the sample guidelines for determining the RPD between a sample and its duplicate. All results fell within the required control limits for all organic and inorganic parameters with the following exceptions:

- Sample numbers B07Q52 and B07Q53 in SDG No. B07Q52.

Analytes	RPD
Aluminum	24.1
Calcium	30.1
Lead	31.5
Magnesium	29.5
Manganese	23.1
Mercury	90.2
Zinc	21.5
Sulfate	90.4
N02N03	200.0

- Sample numbers B07Q71 and B07Q72 in SDG No. B07Q63.

Analytes	RPD
Aluminum	21.9
Iron	66.5
Vanadium	70.4
Zinc	200.0

Two sets of split samples were submitted to TMA by Westinghouse-Hanford. They are sample number B07Q52 in SDG No. B07Q52 and sample number B07Q71 in SDG No. B07Q63. The equivalent split samples B07Q54 and B07Q70 have, to date, not been received by A.T. Kearney validation staff and therefore results could not be compared for their accuracy.

The report is broken down into sections for each chemical analysis type. Each section addresses the data package completeness, holding time adherence, instrument calibration and tuning acceptability, blank results, accuracy, precision, system performance, as well as the compound identification and quantitation. In addition, each section has an overall assessment and summary for the data packages reviewed for the particular chemical analyses. Detailed backup information is provided to the reader by SDG No. and sample number. For each data package, a matrix of chemical analysis per sample number is presented, as well as data qualification summaries.

Laboratory and data validation personnel added qualifiers to the reported data based on specified data quality objectives. The data reporting qualifiers are summarized as follows:

U - Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for dilutions and moisture content. It should be noted that the sample quantitation limit may be higher or lower than the contract or method required detection limit, depending on instrumentation, matrix and concentration factors.

J - Indicates the analyte was analyzed for and detected. However, the associated value is considered to be an estimate due to identified QC deficiencies. Data flagged with a "J" may be usable for decision making purposes, depending upon the DQOs of the project. Laboratories qualify all reported organic detects below CRQL with a "J" per the CLP procedures.

UJ - Indicates the analyte was analyzed for and not detected. However, the associated detection limit is considered to be an estimate due to identified QC deficiencies. Detection limits flagged with a "UJ" may be usable for decision making purposes, depending upon the DQOs of the project.

JN - Indicates the analyte was analyzed for and that there is presumptive evidence of the presence of the compound. The concentration reported is considered an estimate which should be used for informational purposes only.

E - Indicates the analyte was analyzed for and detected at a concentration outside of the calibration range of the instrument. All reported concentrations flagged with an "E" are estimates which may contain significant error.

R - Indicates the analyte was analyzed for and due to a significant QC deficiency, the data are deemed unusable. Analytic results flagged "R" are invalid and provide no information as to whether or not the analyte is present.

The results of data validation performed for the 100-NR-1 Operable Unit Groundwater Drilling Remedial Investigation are contained in the tables following each of the chapters in this report.

Several general quality trends which resulted in data qualification were observed. These included:

- Minor blank contamination was noted in the volatile and semi-volatile results for several samples. The contaminants were compounds commonly found in analytical laboratories and the corresponding sample results were flagged accordingly.

- The holding time from extraction to analysis was exceeded, though not grossly, for several of the BNA and pesticide/PCB samples. The associated results were flagged accordingly.

- The initial calibration results for a few pesticide/PCB compounds did not meet QC limits. All associated results were flagged as estimates.

- The surrogate recovery results for two pesticide/PCB compounds did not meet QC limits in one sample. All associated results were qualified as estimates and flagged "J".

- The metal analysis showed minor matrix spike accuracy problems, duplicate analyses precision results outside of QC, and analytical spike recoveries below the QC limit. Approximately 30 percent of the metals results were flagged "J" due to these factors.

- Some blank contamination was noted in the inorganics analysis. Associated results were flagged accordingly.

- The holding time from sample collection to preparation and analysis was exceeded for pH, fluoride and sulfate analyses in both wet chemistry data packages. Associated results were flagged accordingly.

Soil sample number B07Q55 in SDG No. B07Q52 and sample number B07Q63 in SDG No. B07Q63 have been listed and verified by Westinghouse-Hanford staff as equipment blanks. Under USEPA protocol, equipment blanks are water samples used to indicate whether or not decontamination procedures were adequate or that contamination was not inherent in the equipment used. In this case, the equipment blank could only be validated in terms of precision, accuracy, completeness and representativeness to the data provided but could not be validated as a comparison to other samples within the Sample Delivery Group. Therefore, associated samples were not flagged on the basis of positive results found in the equipment blank.

In general, the protocol-specific QA/QC requirements were met for the samples analyzed in this investigation with the exceptions noted above and discussed in detail in the chapters to follow. All requested analyses were performed.

With the exceptions noted above, the protocol-specific data quality objectives in terms of precision, accuracy, completeness, representativeness, and comparability have been met.

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WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	VOLATILES
120-N-1	B07Q52	S	12/09/92	2-5
	B07Q53	S	12/09/92	2-5
	B07Q54	S	12/09/92	2-5
	B07Q55	S	12/09/92	2-5
	B07Q56	S	12/09/92	2-5
	B07Q57	S	12/09/92	2-5
	B07Q58	S	12/09/92	2-5
	B07Q59	S	12/09/92	2-5
	B07Q60	S	12/09/92	2-5
	B07Q61	S	12/09/92	2-5
	B07Q62	S	12/09/92	2-5
	B07Q62T	S	12/09/92	2-6
	B07Q63	S	12/18/92	2-9
	B07Q64	S	12/18/92	2-9
	B07Q65	S	12/18/92	2-9
	B07Q66	S	12/18/92	2-9
	B07Q67	S	12/18/92	2-9
	B07Q68	S	12/18/92	2-9
	B07Q69	S	12/18/92	2-9
	B07Q70	S	12/18/92	2-9
	B07Q71	S	12/18/92	2-9
	B07Q72	S	12/18/92	2-9
	B07Q73	S	12/18/92	2-9
	B07Q74	S	12/18/92	2-9
	B07Q75	S	12/18/92	2-9
	B07Q76	S	12/18/92	2-10

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2.0 VOLATILE ORGANIC DATA VALIDATION

2.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) were submitted and found to be complete:

B07Q52 B07Q63

2.2 HOLDING TIMES

Analytical holding times were assessed to ascertain whether the Westinghouse-Hanford holding time requirements for volatile organic analyses were met by the laboratory. The Westinghouse-Hanford holding time requirements for volatile organic analyses are as follows: soil samples must be analyzed within 14 days of the date of sample collection; aqueous samples must be analyzed within seven days of the date of sample collection (if unpreserved); and all samples must be shipped on ice to the laboratory and stored at 4°C until analysis.

Holding times for all samples were met.

2.3 INSTRUMENT CALIBRATION AND TUNING

Instrument calibration is performed to establish that the GC/MS instrument is capable of producing acceptable and reliable analytical data over a range of concentrations. The initial and continuing calibrations are to be performed according to CLP protocols. An initial multipoint calibration is performed prior to sample analysis to establish the linear range of the GC/MS instrument. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible on a day-to-day basis.

All initial and continuing calibration results were acceptable.

2.3.1 GC/MS Tuning/Instrument Performance Check

Tuning is performed to ensure that mass resolution, identification, and, to some degree, sensitivity of the GC/MS instrument have been established. When analyzing for volatile organics, instrument tuning is performed with BFB. Instrument

tuning must be performed prior to the analysis of either standards or samples and must meet the criteria for acceptable GC/MS instrument tuning using BFB as outlined in Westinghouse-Hanford (WHC 1991) and in EPA (EPA 1988a and 1988b) criteria.

The original data were checked for transcription and calculation errors to verify that tuning criteria were met. Prior to calibration and sample analysis, all tuning criteria were met.

All GC/MS tuning data are acceptable.

2.4 BLANKS

Method blank and field blank analyses are performed to determine the extent of laboratory or field contamination of samples. No contaminants should be present in the blanks. Analytical results for analytes present in any sample at less than 5 times the concentration of that analyte found in associated blanks should be qualified as non-detects; common laboratory contaminants present at less than 10 times the concentration of that analyte are qualified as non-detects.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for acetone:

- All samples associated with SDG No. B07Q52.
- All samples associated with SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for methylene chloride:

- Sample numbers B07Q63, B07Q64, B07Q65, B07Q66, B07Q68, B07Q69 and B07Q71 in SDG No. B07Q63.

All other laboratory blank results were acceptable.

2.5 ACCURACY

Accuracy was assessed by evaluating the recoveries of stable isotopically labeled surrogate compounds added to all samples and blanks, and by the analysis of a representative sample which was spiked with a variety of volatile organic compounds.

2.5.1 Matrix Spike Recovery

Matrix spike compounds are added to a sample which is representative of the sample delivery group. Matrix spike analyses are performed in duplicate using five compounds and

should be within the established quality control limits (EPA 1988b). The matrix spike analyses estimate how much the target compounds are interfered with, either positively or negatively, by the sample matrix.

All MS/MSD results were acceptable.

2.5.2 Surrogate Recovery

Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. When a surrogate compound recovery is out of the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates (J). Undetected compounds are qualified as having an estimated detection limit. (UJ).

All surrogate recovery results are acceptable.

2.6 PRECISION

Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. When the laboratory has not performed duplicate spike analyses, precision may also be assessed using unspiked duplicate sample analyses. Field precision is measured by analyzing duplicate samples taken in the field.

All matrix spike/matrix spike duplicate RPD results were acceptable.

2.7 INTERNAL STANDARDS PERFORMANCE

Internal standard performance was assessed to determine whether abrupt changes in instrument response and sensitivity occurred that may have affected the reliability of the analytical data. The response (area or height) of the internal standards must not vary by more than 100 percent or -50 percent from the response of the internal standard that was used to calculate the upper and lower bounds. The upper and lower bounds define the range for acceptable internal standard response (area/height) for the sample analyses.

All internal standard recovery results were acceptable.

2.8 COMPOUND IDENTIFICATION AND QUANTITATION

The identity of detected compounds was confirmed to investigate the possibility of false positives. The confirmation

of compound identification during the quality assurance review focuses on false positives because only mass spectra for positive identifications are submitted. However, target compounds that are reported as undetected are also evaluated to investigate the possibility of false negatives. Confirmation of possible false negatives is addressed by reviewing other factors relating to analytical sensitivity (e.g., relative response factors, detection limits, linearity, analytical recovery).

Compound quantitations and reported detection limits were recalculated for a minimum of 20 percent of the samples in each case to verify that they are accurate and are consistent with CLP requirements.

Below the CRQL, instrument precision becomes more variable as the instrument detection limit is approached. Therefore, the concentration of any compound that was detected below the CRQL was qualified as an estimate (J).

The reported results and quantitation limits were verified as correct in all cases.

2.9 OVERALL ASSESSMENT AND SUMMARY

A thorough review of ongoing data acquisition and instrument performance criteria was made to assess overall GC/MS instrument performance. No changes in instrument performance were noted that would result in the degradation of data quality. No indications of unacceptable instrument performance (i.e., shifts in baseline stability, retention time shifts, extraneous peaks, or sensitivity) were found during the quality assurance review.

In general, the volatile data presented in this report met the protocol-specified QA/QC requirements. Minor blank contamination was detected in several samples. The data are considered valid and usable within the standard error associated with the method. All other results are considered to be acceptable and usable for all purposes.

VOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q52																				
Sample Number		B07Q52		B07Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks				DUP		EB															
Sample Date		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92	
Analysis Date		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/23/92	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Bromomethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Vinyl Chloride	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Chloroethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Methylene Chloride	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Acetone	10	13	U	11	U	10	U	16	U	11	U	13	U	15	U	17	U	18	U	11	U
Carbon Disulfide	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
1,1-Dichloroethene	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
1,1-Dichloroethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
1,2-Dichloroethene (total)	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Chloroform	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
1,2-Dichloroethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
2-Butanone	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
1,1,1-Trichloroethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Carbon Tetrachloride	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Vinyl Acetate	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Bromodichloromethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
1,2-Dichloropropane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
cis-1,3-Dichloropropene	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Trichloroethene	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Dibromochloromethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
1,1,2-Trichloroethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Benzene	10	11	U	11	U	10	U	11	U	11	U	1	J	11	U	10	U	11	U	11	U
trans-1,3-Dichloropropene	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Bromoform	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
4-Methyl-2-pentanone	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
2-Hexanone	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Tetrachloroethene	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
1,1,2,2-Tetrachloroethane	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Toluene	10	7	J	8	J	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Chlorobenzene	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Ethylbenzene	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Styrene	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U
Xylene (total)	10	11	U	11	U	10	U	11	U	11	U	11	U	11	U	10	U	11	U	11	U

DUP = Duplicate, EB = Equipment Blank

VOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																			
Laboratory: TMA																			
Case	SDG: B07Q52																		
Sample Number		B07Q62T																	
Location		120-N-1																	
Remarks																			
Sample Date		12/09/92																	
Analysis Date		12/23/92																	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	11	U																
Bromomethane	10	11	U																
Vinyl Chloride	10	11	U																
Chloroethane	10	11	U																
Methylene Chloride	10	11	U																
Acetone	10	11	U																
Carbon Disulfide	10	11	U																
1,1-Dichloroethene	10	11	U																
1,1-Dichloroethane	10	11	U																
1,2-Dichloroethene (total)	10	11	U																
Chloroform	10	11	U																
1,2-Dichloroethane	10	11	U																
2-Butanone	10	11	U																
1,1,1-Trichloroethane	10	3	J																
Carbon Tetrachloride	10	11	U																
Vinyl Acetate	10	11	U																
Bromodichloromethane	10	11	U																
1,2-Dichloropropane	10	11	U																
cis-1,3-Dichloropropene	10	11	U																
Trichloroethene	10	11	U																
Dibromochloromethane	10	11	U																
1,1,2-Trichloroethane	10	11	U																
Benzene	10	11	U																
trans-1,3-Dichloropropene	10	11	U																
Bromoform	10	11	U																
4-Methyl-2-pentanone	10	11	U																
2-Hexanone	10	11	U																
Tetrachloroethene	10	11	U																
1,1,2,2-Tetrachloroethane	10	11	U																
Toluene	10	11	U																
Chlorobenzene	10	11	U																
Ethylbenzene	10	11	U																
Styrene	10	11	U																
Xylene (total)	10	11	U																

[Duplicate, EB = Equipment Blank

BLANK AND SAMPLE DATA SUMMARY

SDG:B07Q52	REVIEWER: RB			DATE: 4/16/93				PAGE 1 OF 1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK	Acetone	17			ug/kg	85	170	All	U

DATA QUALIFICATION SUMMARY

SDG: B07Q52	REVIEWER: RB	DATE: 4/16/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Acetone	U	All	Lab Blank Contamination

VOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																							
Laboratory: TMA																							
Case	SDG: B07Q63																						
Sample Number		B07Q63		B07Q64		B07Q65		B07Q66		B07Q68		B07Q69		B07Q71		B07Q72		B07Q73		B07Q75			
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1			
Remarks		EB														DUP				TB			
Sample Date		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92			
Analysis Date		12/28/92		12/28/92		12/28/92		12/28/92		12/28/92		12/28/92		12/28/92		12/23/92		12/23/92		12/23/92			
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Chloromethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Bromomethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Vinyl Chloride	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Chloroethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Methylene Chloride	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	2	J	10	U		
Acetone	10	20	U	17	U	17	U	14	U	19	U	17	U	23	U	13	U	16	U	10	U		
Carbon Disulfide	10	10	U	10	U	10	U	14	U	19	U	10	U	11	U	11	U	11	U	10	U		
1,1-Dichloroethene	10	10	U	10	U	10	U	14	U	19	U	10	U	11	U	11	U	11	U	10	U		
1,1-Dichloroethane	10	10	U	10	U	10	U	14	U	19	U	10	U	11	U	11	U	11	U	10	U		
1,2-Dichloroethene (total)	10	10	U	10	U	10	U	14	U	19	U	10	U	11	U	11	U	11	U	10	U		
Chloroform	10	3	J	2	J	2	J	2	J	2	J	2	J	2	J	11	U	11	U	10	U		
1,2-Dichloroethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
2-Butanone	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
1,1,1-Trichloroethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Carbon Tetrachloride	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Vinyl Acetate	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Bromodichloromethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
1,2-Dichloropropane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
cis-1,3-Dichloropropene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Trichloroethene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Dibromochloromethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
1,1,2-Trichloroethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Benzene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
trans-1,3-Dichloropropene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Bromoform	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
4-Methyl-2-pentanone	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
2-Hexanone	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Tetrachloroethene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
1,1,2,2-Tetrachloroethane	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Toluene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	1	J	2	J	10	U		
Chlorobenzene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Ethylbenzene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Styrene	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		
Xylene (total)	10	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	11	U	10	U		

DUP = Duplicate, EB = Equipment Blank, TB = Trip Blank

VOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q63																				
Sample Number		B07Q76																			
Location		120-N-1																			
Remarks		TB																			
Sample Date		12/18/92																			
Analysis Date		12/23/92																			
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	10	U																		
Bromomethane	10	10	U																		
Vinyl Chloride	10	10	U																		
Chloroethane	10	10	U																		
Methylene Chloride	10	10	U																		
Acetone	10	11	U																		
Carbon Disulfide	10	10	U																		
1,1-Dichloroethene	10	10	U																		
1,1-Dichloroethane	10	10	U																		
1,2-Dichloroethene (total)	10	10	U																		
Chloroform	10	10	U																		
1,2-Dichloroethane	10	10	U																		
2-Butanone	10	10	U																		
1,1,1-Trichloroethane	10	10	U																		
Carbon Tetrachloride	10	10	U																		
Vinyl Acetate	10	10	U																		
Bromodichloromethane	10	10	U																		
1,2-Dichloropropane	10	10	U																		
cis-1,3-Dichloropropene	10	10	U																		
Trichloroethene	10	10	U																		
Dibromochloromethane	10	10	U																		
1,1,2-Trichloroethane	10	10	U																		
Benzene	10	10	U																		
trans-1,3-Dichloropropene	10	10	U																		
Bromoform	10	10	U																		
4-Methyl-2-pentanone	10	10	U																		
2-Hexanone	10	10	U																		
Tetrachloroethene	10	10	U																		
1,1,2,2-Tetrachloroethane	10	10	U																		
Toluene	10	10	U																		
Chlorobenzene	10	10	U																		
Ethylbenzene	10	10	U																		
Styrene	10	10	U																		
Xylene (total)	10	10	U																		

DI Duplicate, EB = Equipment Blank, TB = Trip Blank

BLANK AND SAMPLE DATA SUMMARY

SDG:B07Q63	REVIEWER: RB			DATE: 4/13/93				PAGE_1_OF_1
COMMENTS:								
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK1228	Methylene Chloride	8	J		ug/kg	40	80	B07Q63, B07Q64, B07Q65, B07Q66, B07Q68, B07Q69, B07Q71	U
VBLK1228	Acetone	17			ug/kg	85	170	B07Q63, B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71	U
VBLK1223R	Acetone	14			ug/kg	70	140	B07Q72, B07Q73, B07Q75, B07Q76	U

DATA QUALIFICATION SUMMARY

SDG: B07Q63	REVIEWER: RB	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene Chloride	U	B07Q63, B07Q64, B07Q65, B07Q66, B07Q68, B07Q69, B07Q71	Lab Blank Contamination
Acetone	U	B07Q63, B07Q64, B07Q65, B07Q66, B07Q68, B07Q69, B07Q71, B07Q72, B07Q73, B07Q75, B07Q76	Lab Blank Contamination

WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	SEMI-VOLATILES
120-N-1	B07Q52	S	12/09/92	3-7, 3-8
	B07Q53	S	12/09/92	3-7, 3-8
	B07Q54	S	12/09/92	3-7, 3-8
	B07Q55	S	12/09/92	3-7, 3-8
	B07Q56	S	12/09/92	3-7, 3-8
	B07Q57	S	12/09/92	3-7, 3-8
	B07Q58	S	12/09/92	3-7, 3-8
	B07Q59	S	12/09/92	3-7, 3-8
	B07Q60	S	12/09/92	3-7, 3-8
	B07Q61	S	12/09/92	3-7, 3-8
	B07Q62	S	12/09/92	3-7, 3-8
	B07Q63	S	12/18/92	3-12, 3-13
	B07Q64	S	12/18/92	3-12, 3-13
	B07Q65	S	12/18/92	3-12, 3-13
	B07Q66	S	12/18/92	3-12, 3-13
	B07Q67	S	12/18/92	3-12, 3-13
	B07Q68	S	12/18/92	3-12, 3-13
	B07Q69	S	12/18/92	3-12, 3-13
	B07Q70	S	12/18/92	3-12, 3-13
	B07Q71	S	12/18/92	3-12, 3-13
	B07Q72	S	12/18/92	3-12, 3-13
	B07Q73	S	12/18/92	3-12, 3-13

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3.0 SEMI-VOLATILE ORGANIC DATA VALIDATION

3.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) were submitted and found to be complete:

B07Q52 B07Q63

3.2 HOLDING TIMES

Analytical holding times were assessed to ascertain whether the holding time requirements for semi-volatile analyses were met by the laboratory. Westinghouse-Hanford protocols require that samples be extracted within seven days of collection and be analyzed within 40 days of extraction (WHC 1991a).

Based upon Westinghouse-Hanford data validation procedures, the seven-day extraction holding time was exceeded for several samples. These samples were flagged "J" and are considered to be estimated. However, these samples meet the requirements of USEPA Data Validation Guidelines, which requires a 14-day extraction holding time.

The seven-day holding time was exceeded for the following samples:

- All samples associated with SDG No. B07Q52.

Holding time requirements for all samples were met.

3.3 INSTRUMENT CALIBRATION AND TUNING

3.3.1 GC/MS Tuning/Instrument Performance Check

Tuning is performed to ensure that mass resolution, and to some degree, sensitivity, of the GC/MS instrument has been established. When analyzing for semi volatile organic compounds, the GC/MS is tuned using DFTPP. The GC/MS must be tuned prior to the analysis of either standards or samples, and tuning must meet the criteria established by the analytical protocol. The specific criteria for acceptable GC/MS tuning using DFTPP are outlined in Westinghouse-Hanford procedures (WHC 1991) and in CLP protocols (EPA 1988a and 1988b).

As a part of data validation, the original tuning data were checked for transcription and calculation errors to verify that tuning and performance criteria were met.

All tuning and performance criteria were met.

3.3.2 Initial Calibration

The GC/MS instrument is calibrated to ensure that it is capable of producing acceptable and reliable analytical data over a range of concentrations. The initial and continuing calibrations are to be performed according to CLP protocols. An initial multipoint calibration is performed prior to sample analysis to establish the linearity range of the GC/MS instrument. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible on a day-to-day basis.

Instrument response is established by the initial calibration when the RRFs for all target compounds are greater than or equal to 0.05 units. Linearity is established when the RSDs of the RRFs are less than or equal to 30 percent.

All initial calibration results were acceptable.

3.3.3 Continuing Calibration

The criteria for accepting the continuing calibration require that a standard be analyzed at least once per 12 hour period and that the RRFs of all target compounds be greater than or equal to 0.05 units. In addition, the percent difference of these RRFs must be less than or equal to 25 percent of the average RRFs calculated for the associated initial calibration.

All continuing calibration results were acceptable.

3.4 BLANKS

Method blank and field blank analyses are performed to determine the extent of laboratory or field contamination of samples. No contaminants should be present in the blanks. Analytical results for analytes present in any sample at less than 5 times the concentration of that analyte found in associated blanks should be qualified as non-detects; in the case of certain common laboratory contaminants, results less than 10 times blank concentrations should be qualified as non-detects.

Due to the presence of di-n-butylphthalate in the laboratory blank, the following associated sample results for the above analyte were qualified as non-detects (U qualifier):

- Sample number B07Q56 in SDG No. B07Q52.
- Sample numbers B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72 and B07Q73 in SDG No. B07Q63.

All other blank results were acceptable.

3.5 ACCURACY

Accuracy was assessed by evaluating the recoveries of stable isotopically labeled surrogate compounds added to all samples and blanks, and by the analysis of a representative sample which was spiked with a variety of organic compounds.

3.5.1 Matrix Spike Recovery

Matrix spike compounds are added to a sample which is representative of the sample delivery group. Matrix spike analyses are performed in duplicate using the 11 compounds specified by CLP protocols. All recoveries for the 11 compounds should be within the established QC limits (EPA 1988b). The matrix spike analyses estimate how much the analyses for the target compounds are interfered with, either positively or negatively, by the sample matrix. Because the matrix spike is performed using only one of the samples extracted with the SDG, these data alone cannot be used to evaluate the precision and accuracy of individual samples.

All matrix spike/matrix spike duplicate recovery results were acceptable.

3.5.2 Surrogate Recovery

Surrogate compound recoveries are calculated using analytical results from six stable, isotopically labeled surrogate compounds added to the sample prior to sample preparation and analysis. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. When recoveries for any two surrogate compounds are out of the control window, all positively identified target compound concentrations in samples associated with the unacceptable surrogate recoveries are qualified as estimates (J) and undetected compounds are qualified estimated below the detection limit (UJ).

Surrogate recovery results were acceptable for all samples.

3.6 PRECISION

The precision is expressed by the RPD between the recoveries of the matrix spike and the matrix spike duplicate analyses performed on a sample, and through a comparison of the results for field duplicate samples. Acceptable control windows for RPD for matrix spike/matrix spike duplicate analyses have been established by the EPA CLP program.

Field precision is measured by analyzing duplicate samples taken in the field. No standards have been established for qualifying data based on RPD for duplicate field samples by CLP protocols. Westinghouse-Hanford procedures establish the following criteria for duplicate field sample analyses for organic compounds, based on criteria established for inorganic analyses for laboratory duplicates:

1. For compounds whose concentrations are greater than 5 times CRQL, RPDs, must be ±20 percent for aqueous samples and ±35 percent for soil samples.

2. When one or more compounds are present at concentrations less than 5 times CRQL, the concentration difference must be ± CRQL for aqueous samples and ± CRQL for soil samples.

The matrix spike/matrix spike duplicate RPD results were acceptable for all samples.

3.7 SYSTEM PERFORMANCE

Internal standard performance was assessed to determine whether abrupt changes in instrument response and sensitivity occurred that may have affected the reliability of the analytical data. The response (area or height) of the internal standards must not vary by more than -50 percent or +100 percent from the response of the calibration standard that was used to calculate the upper and lower bounds. The upper and lower bounds define the range for acceptable internal standard response (area/height) for the sample analyses. In addition, retention times for the internal standard must not vary more than ±30 seconds from that of the associated calibration standard.

All internal standard results were acceptable.

3.8 COMPOUND IDENTIFICATION AND QUANTITATION

The identities of detected compounds were confirmed to investigate the possibility of false positives. The confirmation of compound identification during the QA review focuses on false positives because only mass spectra for positive identifications

- Sample number B07Q56 in SDG No. B07Q52.
- Sample numbers B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72 and B07Q73 in SDG No. B07Q63.

All other blank results were acceptable.

3.5 ACCURACY

Accuracy was assessed by evaluating the recoveries of stable isotopically labeled surrogate compounds added to all samples and blanks, and by the analysis of a representative sample which was spiked with a variety of organic compounds.

3.5.1 Matrix Spike Recovery

Matrix spike compounds are added to a sample which is representative of the sample delivery group. Matrix spike analyses are performed in duplicate using the 11 compounds specified by CLP protocols. All recoveries for the 11 compounds should be within the established QC limits (EPA 1988b). The matrix spike analyses estimate how much the analyses for the target compounds are interfered with, either positively or negatively, by the sample matrix. Because the matrix spike is performed using only one of the samples extracted with the SDG, these data alone cannot be used to evaluate the precision and accuracy of individual samples.

All matrix spike/matrix spike duplicate recovery results were acceptable.

3.5.2 Surrogate Recovery

Surrogate compound recoveries are calculated using analytical results from six stable, isotopically labeled surrogate compounds added to the sample prior to sample preparation and analysis. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. When recoveries for any two surrogate compounds are out of the control window, all positively identified target compound concentrations in samples associated with the unacceptable surrogate recoveries are qualified as estimates (J) and undetected compounds are qualified estimated below the detection limit (UJ).

Surrogate recovery results were acceptable for all samples.

3.6 PRECISION

The precision is expressed by the RPD between the recoveries of the matrix spike and the matrix spike duplicate analyses performed on a sample, and through a comparison of the results for field duplicate samples. Acceptable control windows for RPD for matrix spike/matrix spike duplicate analyses have been established by the EPA CLP program.

Field precision is measured by analyzing duplicate samples taken in the field. No standards have been established for qualifying data based on RPD for duplicate field samples by CLP protocols. Westinghouse-Hanford procedures establish the following criteria for duplicate field sample analyses for organic compounds, based on criteria established for inorganic analyses for laboratory duplicates:

1. For compounds whose concentrations are greater than 5 times CRQL, RPDs, must be ±20 percent for aqueous samples and ±35 percent for soil samples.

2. When one or more compounds are present at concentrations less than 5 times CRQL, the concentration difference must be ± CRQL for aqueous samples and ± CRQL for soil samples.

The matrix spike/matrix spike duplicate RPD results were acceptable for all samples.

3.7 SYSTEM PERFORMANCE

Internal standard performance was assessed to determine whether abrupt changes in instrument response and sensitivity occurred that may have affected the reliability of the analytical data. The response (area or height) of the internal standards must not vary by more than -50 percent or +100 percent from the response of the calibration standard that was used to calculate the upper and lower bounds. The upper and lower bounds define the range for acceptable internal standard response (area/height) for the sample analyses. In addition, retention times for the internal standard must not vary more than ±30 seconds from that of the associated calibration standard.

All internal standard results were acceptable.

3.8 COMPOUND IDENTIFICATION AND QUANTITATION

The identities of detected compounds were confirmed to investigate the possibility of false positives. The confirmation of compound identification during the QA review focuses on false positives because only mass spectra for positive identifications

are submitted. However, target compounds that are reported as undetected are also evaluated to investigate the possibility of false negatives. Confirmation of possible false negatives is addressed by reviewing other factors relating to analytical sensitivity (e.g., detection limits, linearity, analytical recovery). Compound retention times and mass spectra must match those for the standard within set to tolerance limits (EPA 1988b).

3.8.1 Reported Results and Quantitation Limits

Compound quantitations and reported detection limits were recalculated and verified to ensure that they are accurate and are consistent with the internal standards and relative retention times specified by the CLP scope of work.

At concentrations below the CRQL, instrument precision becomes more variable as the IDL is approached. Therefore, the concentrations of any compound detected below the CRQL are qualified as estimates.

All compound identifications and quantitations have been verified as correct.

3.8.2 Tentatively Identified Compounds

Several TICs were identified in the blanks and samples which were flagged "U" according to Westinghouse-Hanford protocols; if the sample result was ±0.06 RRT from that of the blank and if the sample result was less than 5 times the highest blank concentration.

This action is contrary to EPA policy, which indicates that TIC results shown to be due to the presence of blank contamination are flagged "R".

3.9 OVERALL ASSESSMENT AND SUMMARY

A thorough review of ongoing data acquisition and instrument performance criteria was made to assess overall GC/MS instrument performance. No changes in instrument performance were noted that would result in the degradation of data quality. No indications of unacceptable instrument performance (i.e., shifts in baseline stability, retention time shifts, extraneous peaks, sensitivity) were found during the quality assurance review.

In general, the semi-volatile data presented in this report met the protocol-specified QA/QC requirements. Minor blank contamination was detected in several samples. The sample to extraction holding time was exceeded, though not grossly

exceeded, for all samples in one data package. As required by Westinghouse-Hanford protocols, all results for these samples were flagged "J" and are considered to be estimates. The data are considered valid and usable within the standard error associated with the method. All other results are considered to be acceptable and usable for all purposes.

are submitted. However, target compounds that are reported as undetected are also evaluated to investigate the possibility of false negatives. Confirmation of possible false negatives is addressed by reviewing other factors relating to analytical sensitivity (e.g., detection limits, linearity, analytical recovery). Compound retention times and mass spectra must match those for the standard within set to tolerance limits (EPA 1988b).

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SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																									
Laboratory: TMA																									
Case	SDG: B07Q52																								
Sample Number		B07Q52		B07Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62					
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1					
Remarks				DUP		EB																			
Sample Date		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92					
Extraction Date		12/22/92		12/22/92		12/22/92		12/23/92		12/22/92		12/22/92		12/23/92		12/22/92		12/22/92		12/22/92					
Analysis Date		12/28/92		12/28/92		12/28/92		12/29/92		12/28/92		12/28/92		12/29/92		12/29/92		12/29/92		12/29/92					
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q				
Phenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
bis(2-Chloroethyl)ether	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2-Chlorophenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
1,3-Dichlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
1,4-Dichlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Benzyl Alcohol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
1,2-Dichlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2-Methylphenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
bis(2-Chloroisopropyl)Ether	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
4-Methylphenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
N-Nitroso-di-n-propylamine	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Hexachloroethane	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Nitrobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Isophorone	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2-Nitrophenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2,4-Dimethylphenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Benzoic acid	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ				
bis(2-Chloroethoxy)methane	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2,4-Dichlorophenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
1,2,4-Trichlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Naphthalene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
4-Chloroaniline	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Hexachlorobutadiene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
4-Chloro-3-methylphenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2-Methylnaphthalene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Hexachlorocyclopentadiene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2,4,6-Trichlorophenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2,4,5-Trichlorophenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ				
2-Chloronaphthalene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2-Nitroaniline	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ				
Dimethylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
Acenaphthylene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				
2,6-Dinitrotoluene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ				

DUP = Duplicate, EB = Equipment Blank

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q52																				
Sample Number		B07Q52		B07Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks				DUP		EB															
Sample Date		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92	
Extraction Date		12/22/92		12/22/92		12/22/92		12/23/92		12/22/92		12/22/92		12/23/92		12/22/92		12/22/92		12/22/92	
Analysis Date		12/28/92		12/28/92		12/28/92		12/29/92		12/28/92		12/28/92		12/29/92		12/29/92		12/29/92		12/29/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
Acenaphthene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,4-Dinitrophenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
4-Nitrophenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
Dibenzofuran	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,4-Dinitrotoluene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Diethylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Chlorophenyl-phenyl ether	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Fluorene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Nitroaniline	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
4,6-Dinitro-2-methylphenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
N-Nitrosodiphenylamine	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Bromophenyl-phenylether	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Hexachlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Pentachlorophenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
Phenanthrene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Anthracene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Di-n-butylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Fluoranthene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Pyrene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Butylbenzylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
3,3'-Dichlorobenzidine	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benz(a)anthracene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Chrysene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
bis(2-Ethylhexyl)phthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Di-n-octylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzo(b)fluoranthene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzo(k)fluoranthene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzo(a)pyrene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Indeno(1,2,3-cd)pyrene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Dibenz(a,h)anthracene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzo(g,h,i)perylene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ

DU Duplicate, EB = Equipment Blank

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q52																				
Sample Number		B07Q52		B07Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks				DUP		EB															
Sample Date		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92	
Extraction Date		12/22/92		12/22/92		12/22/92		12/23/92		12/22/92		12/22/92		12/23/92		12/22/92		12/22/92		12/22/92	
Analysis Date		12/28/92		12/28/92		12/28/92		12/29/92		12/28/92		12/28/92		12/29/92		12/29/92		12/29/92		12/29/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
bis(2-Chloroethyl)ether	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2-Chlorophenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
1,3-Dichlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
1,4-Dichlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzyl Alcohol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
1,2-Dichlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2-Methylphenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
bis(2-Chloroisopropyl)Ether	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Methylphenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
N-Nitroso-di-n-propylamine	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Hexachloroethane	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Nitrobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Isophorone	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2-Nitrophenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,4-Dimethylphenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzoic acid	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
bis(2-Chloroethoxy)methane	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,4-Dichlorophenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
1,2,4-Trichlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Naphthalene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Chloroaniline	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Hexachlorobutadiene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Chloro-3-methylphenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2-Methylnaphthalene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Hexachlorocyclopentadiene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,4,6-Trichlorophenol	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,4,5-Trichlorophenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
2-Chloronaphthalene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2-Nitroaniline	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
Dimethylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Acenaphthylene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,6-Dinitrotoluene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ

DUP = Duplicate, EB = Equipment Blank

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q52																				
Sample Number		B07Q52		B07Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks				DUP		EB															
Sample Date		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92	
Extraction Date		12/22/92		12/22/92		12/22/92		12/23/92		12/22/92		12/22/92		12/23/92		12/22/92		12/22/92		12/22/92	
Analysis Date		12/28/92		12/28/92		12/28/92		12/29/92		12/28/92		12/28/92		12/29/92		12/29/92		12/29/92		12/29/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
Acenaphthene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,4-Dinitrophenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
4-Nitrophenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
Dibenzofuran	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
2,4-Dinitrotoluene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Diethylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Chlorophenyl-phenyl ether	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Fluorene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Nitroaniline	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
4,6-Dinitro-2-methylphenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
N-Nitrosodiphenylamine	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
4-Bromophenyl-phenylether	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Hexachlorobenzene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Pentachlorophenol	1700	870	UJ	870	UJ	790	UJ	840	UJ	860	UJ	860	UJ	860	UJ	810	UJ	830	UJ	820	UJ
Phenanthrene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Anthracene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Di-n-butylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Fluoranthene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Pyrene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Butylbenzylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
3,3'-Dichlorobenzidine	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benz(a)anthracene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Chrysene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
bis(2-Ethylhexyl)phthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Di-n-octylphthalate	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzo(b)fluoranthene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzo(k)fluoranthene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzo(a)pyrene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Indeno(1,2,3-cd)pyrene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Dibenz(a,h)anthracene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ
Benzo(g,h,i)perylene	330	360	UJ	360	UJ	330	UJ	350	UJ	350	UJ	360	UJ	360	UJ	330	UJ	340	UJ	340	UJ

DL' Duplicate, EB = Equipment Blank

HOLDING TIME SUMMARY

SDG: B07Q52	REVIEWER: RB		DATE: 04/19/93			PAGE_1_OF_1_	
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q52	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q53	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q55	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q56	BNA	12/09/92	12/23/92	12/29/92	7	40	J
B07Q57	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q58	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q59	BNA	12/09/92	12/23/92	12/29/92	7	40	J
B07Q60	BNA	12/09/92	12/22/92	12/29/92	7	40	J
B07Q61	BNA	12/09/92	12/22/92	12/29/92	7	40	J
B07Q62	BNA	12/09/92	12/22/92	12/29/92	7	40	J

BLANK AND SAMPLE DATA SUMMARY

SDG:B07Q52	REVIEWER: RB			DATE: 04/19/93				PAGE 1 OF 1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK	Di-n-butylphthalate	89	J		ug/kg	445	890	B07Q56	U

HOLDING TIME SUMMARY

SDG: B07Q52	REVIEWER: RB		DATE: 04/19/93		PAGE 1 OF 1		
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q52	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q53	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q55	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q56	BNA	12/09/92	12/23/92	12/29/92	7	40	J
B07Q57	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q58	BNA	12/09/92	12/22/92	12/28/92	7	40	J
B07Q59	BNA	12/09/92	12/23/92	12/29/92	7	40	J
B07Q60	BNA	12/09/92	12/22/92	12/29/92	7	40	J
B07Q61	BNA	12/09/92	12/22/92	12/29/92	7	40	J
B07Q62	BNA	12/09/92	12/22/92	12/29/92	7	40	J

BLANK AND SAMPLE DATA SUMMARY

SDG:B07Q52	REVIEWER: RB			DATE: 04/19/93				PAGE 1 OF 1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK	Di-n-butylphthalate	89	J		ug/kg	445	890	B07Q56	U

DATA QUALIFICATION SUMMARY

SDG: B07Q52	REVIEWER: RB	DATE: 04/19/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All BNA compounds	J	All	Holding Times Exceeded
Di-n-butylphthalate	U	B07Q56	Lab Blank Contamination

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q63																				
Sample Number		B07Q63		B07Q64		B07Q65		B07Q66		B07Q67		B07Q68		B07Q69		B07Q71		B07Q72		B07Q73	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks		EB																DUP			
Sample Date		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92	
Extraction Date		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92	
Analysis Date		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
bis(2-Chloroethyl)ether	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2-Chlorophenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
1,3-Dichlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
1,4-Dichlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzyl Alcohol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
1,2-Dichlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2-Methylphenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
bis(2-Chloroisopropyl)Ether	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Methylphenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
N-Nitroso-di-n-propylamine	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Hexachloroethane	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Nitrobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Isophorone	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2-Nitrophenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,4-Dimethylphenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzoic acid	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
bis(2-Chloroethoxy)methane	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,4-Dichlorophenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
1,2,4-Trichlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Naphthalene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Chloroaniline	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Hexachlorobutadiene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Chloro-3-methylphenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2-Methylnaphthalene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Hexachlorocyclopentadiene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,4,6-Trichlorophenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,4,5-Trichlorophenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
2-Chloronaphthalene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2-Nitroaniline	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
Dimethylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Acenaphthylene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,6-Dinitrotoluene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U

DUP = Duplicate, EB = Equipment Blank

DATA QUALIFICATION SUMMARY

SDG: B07Q52	REVIEWER: RB	DATE: 04/19/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All BNA compounds	J	All	Holding Times Exceeded
Di-n-butylphthalate	U	B07Q56	Lab Blank Contamination

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																							
Laboratory: TMA																							
Case	SDG: B07Q63																						
Sample Number		B07Q63		B07Q64		B07Q65		B07Q66		B07Q67		B07Q68		B07Q69		B07Q71		B07Q72		B07Q73			
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1			
Remarks		EB																DUP					
Sample Date		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92			
Extraction Date		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92			
Analysis Date		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93			
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Phenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
bis(2-Chloroethyl)ether	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2-Chlorophenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
1,3-Dichlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
1,4-Dichlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Benzyl Alcohol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
1,2-Dichlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2-Methylphenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
bis(2-Chloroisopropyl)Ether	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
4-Methylphenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
N-Nitroso-di-n-propylamine	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Hexachloroethane	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Nitrobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Isophorone	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2-Nitrophenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2,4-Dimethylphenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Benzoic acid	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U		
bis(2-Chloroethoxy)methane	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2,4-Dichlorophenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
1,2,4-Trichlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Naphthalene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
4-Chloroaniline	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Hexachlorobutadiene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
4-Chloro-3-methylphenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2-Methylnaphthalene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Hexachlorocyclopentadiene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2,4,6-Trichlorophenol	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2,4,5-Trichlorophenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U		
2-Chloronaphthalene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2-Nitroaniline	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U		
Dimethylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
Acenaphthylene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		
2,6-Dinitrotoluene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U		

DUP = Duplicate, EB = Equipment Blank

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q63																				
Sample Number		B07Q63		B07Q64		B07Q65		B07Q66		B07Q67		B07Q68		B07Q69		B07Q71		B07Q72		B07Q73	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks		EB																DUP			
Sample Date		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92	
Extraction Date		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92	
Analysis Date		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
Acenaphthene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,4-Dinitrophenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
4-Nitrophenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
Dibenzofuran	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,4-Dinitrotoluene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Diethylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Chlorophenyl-phenyl ether	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Fluorene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Nitroaniline	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
4,6-Dinitro-2-methylphenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
N-Nitrosodiphenylamine	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Bromophenyl-phenylether	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Hexachlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Pentachlorophenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
Phenanthrene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Anthracene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Di-n-butylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Fluoranthene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Pyrene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Butylbenzylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
3,3'-Dichlorobenzidine	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benz(a)anthracene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Chrysene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
bis(2-Ethylhexyl)phthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Di-n-octylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzo(b)fluoranthene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzo(k)fluoranthene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzo(a)pyrene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Indeno(1,2,3-cd)pyrene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Dibenz(a,h)anthracene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzo(g,h,i)perylene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U

DUP = Duplicate, EB = Equipment Blank

BLANK AND SAMPLE DATA SUMMARY

SDG: B07Q63	REVIEWER: RB			DATE: 4/13/93				PAGE_1_OF_1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK1223SI	Di-n-butylphthalate	92	J		ug/Kg	460	920	B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72, B07Q73	U

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q63																				
Sample Number		B07Q63		B07Q64		B07Q65		B07Q66		B07Q67		B07Q68		B07Q69		B07Q71		B07Q72		B07Q73	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks		EB																DUP			
Sample Date		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92	
Extraction Date		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92		12/23/92	
Analysis Date		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93		01/22/93	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
Acenaphthene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,4-Dinitrophenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
4-Nitrophenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
Dibenzofuran	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
2,4-Dinitrotoluene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Diethylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Chlorophenyl-phenyl ether	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Fluorene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Nitroaniline	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
4,6-Dinitro-2-methylphenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
N-Nitrosodiphenylamine	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
4-Bromophenyl-phenylether	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Hexachlorobenzene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Pentachlorophenol	1700	790	U	820	U	830	U	820	U	830	U	810	U	810	U	840	U	840	U	870	U
Phenanthrene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Anthracene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Di-n-butylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Fluoranthene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Pyrene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Butylbenzylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
3,3'-Dichlorobenzidine	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benz(a)anthracene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Chrysene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
bis(2-Ethylhexyl)phthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Di-n-octylphthalate	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzo(b)fluoranthene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzo(k)fluoranthene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzo(a)pyrene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Indeno(1,2,3-cd)pyrene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Dibenz(a,h)anthracene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U
Benzo(g,h,i)perylene	330	330	U	340	U	340	U	340	U	340	U	330	U	330	U	350	U	350	U	360	U

DUP = Duplicate, EB = Equipment Blank

BLANK AND SAMPLE DATA SUMMARY

SDG: B07Q63	REVIEWER: RB			DATE: 4/13/93				PAGE 1 OF 1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK1223SI	Di-n-butylphthalate	92	J		ug/Kg	460	920	B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72, B07Q73	U

DATA QUALIFICATION SUMMARY

SDG: B07Q63	REVIEWER: RB	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Di-n-butylphthalate	U	B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72, B07Q73	Lab Blank Contamination

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WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	PESTICIDES
120-N-1	B07Q52	S	12/09/92	4-5
	B07Q53	S	12/09/92	4-5
	B07Q54	S	12/09/92	4-5
	B07Q55	S	12/09/92	4-5
	B07Q56	S	12/09/92	4-5
	B07Q57	S	12/09/92	4-5
	B07Q58	S	12/09/92	4-5
	B07Q59	S	12/09/92	4-5
	B07Q60	S	12/09/92	4-5
	B07Q61	S	12/09/92	4-5
	B07Q62	S	12/09/92	4-5
	B07Q63	S	12/18/92	4-9
	B07Q64	S	12/18/92	4-9
	B07Q65	S	12/18/92	4-9
	B07Q66	S	12/18/92	4-9
	B07Q67	S	12/18/92	4-9
	B07Q68	S	12/18/92	4-9
	B07Q69	S	12/18/92	4-9
	B07Q70	S	12/18/92	4-9
	B07Q71	S	12/18/92	4-9
	B07Q72	S	12/18/92	4-9
	B07Q73	S	12/18/92	4-9

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4.0 PESTICIDE AND PCB DATA VALIDATION

4.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) were submitted and found to be complete:

B07Q52 B07Q63

4.2 HOLDING TIMES

Analytical holding times were assessed to ascertain whether the holding time requirements for pesticide/PCB analyses were met by the laboratory. Westinghouse-Hanford procedures require that samples be extracted within seven days of collection and analyzed within 40 days of extraction (WHC 1991a).

Based upon Westinghouse-Hanford data validation procedures, the seven-day extraction holding time was exceeded for several samples. These samples were flagged "J" and are considered to be estimated. However, these samples meet the requirements of USEPA Data Validation Guidelines, which requires a 14-day extraction holding time.

The seven-day holding time was exceeded for the following samples:

- All samples associated with SDG No. B07Q52.
- All samples associated with SDG No. B07Q63.

Holding times for all other samples were met.

4.3 INSTRUMENT PERFORMANCE AND CALIBRATIONS

Instrument performance was assessed to ensure that adequate chromatographic resolution and instrument sensitivity were achieved by the gas chromatographic system.

The specific criteria for acceptable instrument performance are outlined in EPA guidelines (EPA 1988a and 1988b), including the evaluation and qualification procedures that may be performed on the analytical results.

During the quality assurance review, all indicators for acceptable instrument performance were verified. The criteria established by CLP protocols were met and the results are acceptable, except as noted.

Instrument calibration is performed to ensure that the chromatographic system is capable of producing acceptable and reliable analytical data. The initial and continuing calibrations are to be performed according to procedures established by CLP protocols. An initial calibration is performed prior to sample analysis to establish the linear range of the system, including a demonstration that all target compounds can be detected. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible on a day-to-day basis.

4.3.1 Initial Calibrations

The laboratory performed an initial multipoint calibration for the four compounds specified at the concentrations required by CLP protocols. The linearity of the initial calibration is established when the percent RSD or the calibration factors is less than or equal to 10 percent.

The %RSDs for the following compounds did not meet QC limits:

- Alpha-BHC and delta-BHC in all samples associated with SDG Nos. B07Q52 and B07Q63.

All associated sample results were qualified as estimates and flagged "J".

All other initial calibration results were acceptable.

4.3.2 Calibration Verification

The criteria for acceptable continuing calibrations requires that the calibration factors for all target compounds have a percent difference of less than or equal to 15 percent of the average calibration factor calculated for the associated initial calibration standard. The 15 percent difference value is required for results calculated using the chromatographic column which is used for quantitative purposes. In addition, the percent difference of the calibration factors calculated for the chromatographic column that is used for confirmation must be less than or equal to 20 percent.

All calibration verification results were acceptable.

4.4 BLANKS

Method blank and field blank analyses are performed to determine the extent of laboratory or field contamination of samples. No contaminants should be present in the blanks. Analytical results for analytes present in any sample at less than 5 times the concentration of that analyte found in associated blanks should be qualified as non-detects.

There were no compounds of concern detected in the method or field blanks.

4.5 ACCURACY

Accuracy was assessed by evaluating the recoveries of the surrogate compounds and the matrix spike recoveries calculated for the sample analyses.

4.5.1 Matrix Spike Recovery

Matrix spike analyses are performed in duplicate using six compounds specified by CLP protocols. The recoveries for the six compounds must be within the acceptable quality control limits established by CLP protocols.

All matrix spike/matrix spike duplicate results were acceptable.

4.5.2 Surrogate Recovery

The surrogate recovery results for tetrachloro-m-xylene and decachlorobiphenyl in sample number B07Q66 in SDG No. B07Q63 did not meet QC limits. All pesticide/PCB compounds associated with the sample were qualified as estimates and flagged "J".

All other surrogate recovery results were acceptable.

4.6 PRECISION

Precision is expressed by the RPD between the recoveries of the matrix spike and the matrix spike duplicate analyses performed on a sample. When the laboratory has not performed duplicate spike analyses, precision may also be assessed by using unspiked duplicate analyses.

The matrix spike/matrix spike duplicate RPDs were acceptable.

4.7 COMPOUND IDENTIFICATION AND QUANTITATION

The data were evaluated to confirm the positive concentrations and to investigate the possibility of false negatives in all other data. Confirmation of possible false negatives is addressed by reviewing other factors relating to analytical sensitivity (e.g., detection limits, instrument linearity, analytical recovery). These factors were found to be in control, and the data are acceptable.

All compound identifications and quantitation results are acceptable.

4.7.1 Reported Quantitation Limits

Compound quantitations and reported detection limits were recalculated and verified for a minimum of 20 percent of the samples in each case to ensure that they were accurate and are consistent with CLP requirements (EPA 1988a). The reported detection limits must be in accordance with the CRQLs specified in the applicable CLP statement of work.

The compound quantitations and the CRQLs reported were calculated correctly and were acceptable.

4.8 OVERALL ASSESSMENT AND SUMMARY

A thorough review of ongoing data acquisition and instrument performance criteria was made to assess overall GC/MS instrument performance. No changes in instrument performance were noted that would result in the degradation of data quality. No indications of unacceptable instrument performance (i.e., shifts in baseline stability, retention time shifts, extraneous peaks, or sensitivity) were found during the quality assurance review.

In general, the pesticide/PCB data presented in this report met the protocol-specified QA/QC requirements. The initial calibration recovery results for several compounds did not meet QC limits. All associated sample results were qualified as estimates and flagged "J". The surrogate recovery results for one sample did not meet QC limits. All associated sample results were qualified as estimates and flagged "J".

The sampling to extraction holding time was exceeded, though not grossly, for all samples in both data packages. As required by Westinghouse-Hanford protocols, all results for these samples were flagged "J" and are considered to be estimates only. All other results are acceptable and usable for all purposes. The data are considered valid and usable within the standard error associated with the method.

PESTICIDE/PCB ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q52																				
Sample Number		B07Q52		B07Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks				DUP		EB															
Sample Date		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92	
Extraction Date		12/22/92		12/22/92		12/22/92		12/24/92		12/22/92		12/22/92		12/24/92		12/22/92		12/22/92		12/22/92	
Analysis Date		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93	
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
beta-BHC	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
delta-BHC	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
gamma-BHC (Lindane)	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
Heptachlor	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
Aldrin	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
Heptachlor epoxide	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
Endosulfan I	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
Dieldrin	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
4,4'-DDE	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
Endrin	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
Endosulfan II	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
4,4'-DDD	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
Endosulfan sulfate	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
4,4'-DDT	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
Methoxychlor	17.0	19	UJ	18	UJ	17	UJ	18	UJ	18	UJ	18	UJ	18	UJ	18	UJ	17	UJ	17	UJ
Endrin Ketone	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
Endrin Aldehyde	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ
alpha-Chlordane	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
gamma-Chlordane	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ
Toxaphene	170.0	190	UJ	180	UJ	170	UJ	180	UJ	180	UJ	180	UJ	180	UJ	180	UJ	170	UJ	170	UJ
Arochlor-1016	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ
Arochlor-1221	33.0	73	UJ	72	UJ	66	UJ	71	UJ	72	UJ	72	UJ	71	UJ	70	UJ	68	UJ	68	UJ
Arochlor-1232	67.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ
Arochlor-1242	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ
Arochlor-1248	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ
Arochlor-1254	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ
Arochlor-1260	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ

DUP = Duplicate, EB = Equipment Blank

HOLDING TIME SUMMARY

SDG:B07Q52	REVIEWER: RB			DATE: 04/17/93		PAGE 1 OF 1	
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q52	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q53	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q55	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q56	Pest/PCB	12/09/92	12/24/92	01/06/93	7	40	J
B07Q57	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q58	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q59	Pest/PCB	12/09/92	12/24/92	01/06/93	7	40	J
B07Q60	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q61	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q62	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J

PESTICIDE/PCB ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																									
Laboratory: TMA																									
Case	SDG: B07Q52																								
Sample Number		B07Q52		B07Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62					
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1					
Remarks				DUP		EB																			
Sample Date		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92					
Extraction Date		12/22/92		12/22/92		12/22/92		12/24/92		12/22/92		12/22/92		12/24/92		12/22/92		12/22/92		12/22/92					
Analysis Date		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93		01/06/93					
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q				
alpha-BHC	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
beta-BHC	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
delta-BHC	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
gamma-BHC (Lindane)	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
Heptachlor	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
Aldrin	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
Heptachlor epoxide	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
Endosulfan I	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
Dieldrin	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
4,4'-DDE	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
Endrin	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
Endosulfan II	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
4,4'-DDD	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
Endosulfan sulfate	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
4,4'-DDT	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
Methoxychlor	17.0	19	UJ	18	UJ	17	UJ	18	UJ	18	UJ	18	UJ	18	UJ	18	UJ	17	UJ	17	UJ				
Endrin Ketone	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
Endrin Aldehyde	3.3	3.6	UJ	3.6	UJ	3.2	UJ	3.5	UJ	3.6	UJ	3.6	UJ	3.5	UJ	3.4	UJ	3.4	UJ	3.4	UJ				
alpha-Chlordane	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
gamma-Chlordane	1.7	1.9	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ				
Toxaphene	170.0	190	UJ	180	UJ	170	UJ	180	UJ	180	UJ	180	UJ	180	UJ	180	UJ	170	UJ	170	UJ				
Arochlor-1016	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ				
Arochlor-1221	33.0	73	UJ	72	UJ	66	UJ	71	UJ	72	UJ	72	UJ	71	UJ	70	UJ	68	UJ	68	UJ				
Arochlor-1232	67.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ				
Arochlor-1242	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ				
Arochlor-1248	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ				
Arochlor-1254	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ				
Arochlor-1260	33.0	36	UJ	36	UJ	32	UJ	35	UJ	36	UJ	36	UJ	35	UJ	34	UJ	34	UJ	34	UJ				

DUP = Duplicate, EB = Equipment Blank

HOLDING TIME SUMMARY

SDG:B07Q52	REVIEWER: RB			DATE: 04/17/93		PAGE 1 OF 1	
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q52	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q53	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q55	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q56	Pest/PCB	12/09/92	12/24/92	01/06/93	7	40	J
B07Q57	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q58	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q59	Pest/PCB	12/09/92	12/24/92	01/06/93	7	40	J
B07Q60	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q61	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J
B07Q62	Pest/PCB	12/09/92	12/22/92	01/06/93	7	40	J

CALIBRATION DATA SUMMARY

SDG: B07Q52	REVIEWER: RB	DATE: 04/19/93	PAGE 1 OF 1		
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT: H5890A			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
01/05/93	alpha-BHC		19.7	All	J
01/05/93	delta-BHC		18.3	All	J

DATA QUALIFICATION SUMMARY

SDG: B07Q52	REVIEWER: RB	DATE: 04/19/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All pesticide/PCB compounds	J	All	Holding times exceeded
alpha-BHC	J	All	Initial calibration
delta-BHC	J	All	Initial calibration

PESTICIDE/PCB ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q63																				
Sample Number		B07Q63		B07Q64		B07Q65		B07Q66		B07Q67		B07Q68		B07Q69		B07Q71		B07Q72		B07Q73	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks		EB																DUP			
Sample Date		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92		12/18/92	
Extraction Date		12/02/92		12/29/92		12/29/92		12/29/92		12/29/92		12/29/92		12/29/92		12/29/92		12/29/92		12/29/92	
Analysis Date		01/07/93		01/07/93		01/07/93		01/07/93		01/07/93		01/07/93		01/07/93		01/07/93		01/07/93		01/07/93	
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
beta-BHC	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
delta-BHC	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
gamma-BHC (Lindane)	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
Heptachlor	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
Aldrin	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
Heptachlor epoxide	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
Endosulfan I	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
Dieldrin	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
4,4'-DDE	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
Endrin	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
Endosulfan II	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
4,4'-DDD	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
Endosulfan sulfate	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
4,4'-DDT	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
Methoxychlor	17.0	17	UJ	17	UJ	18	UJ	17	UJ	18	UJ	17	UJ	17	UJ	18	UJ	18	UJ	19	UJ
Endrin Ketone	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
Endrin Aldehyde	3.3	3.3	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.3	UJ	3.4	UJ	3.4	UJ	3.4	UJ	3.7	UJ
alpha-Chlordane	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
gamma-Chlordane	1.7	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.8	UJ	1.7	UJ	1.7	UJ	1.8	UJ	1.8	UJ	1.9	UJ
Toxaphene	170.0	170.0	UJ	170.0	UJ	180	UJ	170.0	UJ	180	UJ	170.0	UJ	170	UJ	180	UJ	180	UJ	190	UJ
Arochlor-1016	33.0	33.0	UJ	33.0	UJ	34.0	UJ	34.0	UJ	34.0	UJ	33.0	UJ	34.0	UJ	34.0	UJ	34.0	UJ	37.0	UJ
Arochlor-1221	33.0	66.0	UJ	68.0	UJ	69.0	UJ	68.0	UJ	69.0	UJ	67.0	UJ	69.0	UJ	70.0	UJ	69.0	UJ	75.0	UJ
Arochlor-1232	67.0	33.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	3.4	UJ	34.0	UJ	34.0	UJ	37.0	UJ
Arochlor-1242	33.0	33.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	3.4	UJ	34.0	UJ	34.0	UJ	37.0	UJ
Arochlor-1248	33.0	33.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	3.4	UJ	34.0	UJ	34.0	UJ	37.0	UJ
Arochlor-1254	33.0	33.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	3.4	UJ	34.0	UJ	34.0	UJ	37.0	UJ
Arochlor-1260	33.0	33.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	34.0	UJ	33.0	UJ	3.4	UJ	34.0	UJ	34.0	UJ	37.0	UJ

DUP = Duplicate, EB = Equipment Blank

HOLDING TIME SUMMARY

SDG:B07Q63	REVIEWER: RB		DATE: 4/13/93		PAGE 1 OF 1		
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q63	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q64	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q65	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q66	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q67	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q68	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q69	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q71	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q72	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J
B07Q73	Pest/PCB	12/18/92	12/29/92	1/7/93	7	40	J

CALIBRATION DATA SUMMARY

SDG: B07Q63	REVIEWER: RB		DATE: 4/13/93		PAGE 1 OF 1
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING		INSTRUMENT:		
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
1/5/93	alpha-BHC		19.7	All	J
1/5/93	delta-BHC		18.3	All	J

ACCURACY DATA SUMMARY

SDG: B07Q63	REVIEWER: RB	DATE:4/13/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B07Q66	Tetrachloro-m-xylene	24	B07Q66	J
B07Q66	Decachlorobiphenyl	35	B07Q66	J

CALIBRATION DATA SUMMARY

SDG: B07Q63	REVIEWER: RB	DATE: 4/13/93		PAGE 1 OF 1	
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
1/5/93	alpha-BHC		19.7	All	J
1/5/93	delta-BHC		18.3	All	J

ACCURACY DATA SUMMARY

SDG: B07Q63	REVIEWER: RB	DATE:4/13/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B07Q66	Tetrachloro-m-xylene	24	B07Q66	J
B07Q66	Decachlorobiphenyl	35	B07Q66	J

CALIBRATION DATA SUMMARY

SDG: B07Q63	REVIEWER: RB	DATE: 4/13/93		PAGE 1 OF 1	
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
1/5/93	alpha-BHC		19.7	All	J
1/5/93	delta-BHC		18.3	All	J

ACCURACY DATA SUMMARY

SDG: B07Q63	REVIEWER: RB	DATE:4/13/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B07Q66	Tetrachloro-m-xylene	24	B07Q66	J
B07Q66	Decachlorobiphenyl	35	B07Q66	J

DATA QUALIFICATION SUMMARY

SDG: B07Q63	REVIEWER: RB	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All pesticide/PCB compounds	J	All	Holding times exceeded
alpha-BHC	J	All	Initial calibration
delta-BHC	J	All	Initial calibration
All pesticide/PCB compounds	J	B07Q66	Surrogate recovery

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WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	INORGANICS
120-N-1	B07Q52	S	12/09/92	5-9
	B07Q53	S	12/09/92	5-9
	B07Q54	S	12/09/92	5-9
	B07Q55	S	12/09/92	5-9
	B07Q56	S	12/09/92	5-9
	B07Q57	S	12/09/92	5-9
	B07Q58	S	12/09/92	5-9
	B07Q59	S	12/09/92	5-9
	B07Q60	S	12/09/92	5-9
	B07Q61	S	12/09/92	5-9
	B07Q62	S	12/09/92	5-9
	B07Q63	S	12/18/92	5-9
	B07Q64	S	12/18/92	5-15
	B07Q65	S	12/18/92	5-15
	B07Q66	S	12/18/92	5-15
	B07Q67	S	12/18/92	5-15
	B07Q68	S	12/18/92	5-15
	B07Q69	S	12/18/92	5-15
	B07Q70	S	12/18/92	5-15
	B07Q71	S	12/18/92	5-15
	B07Q72	S	12/18/92	5-15
	B07Q73	S	12/18/92	5-15

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5.0 INORGANIC DATA VALIDATION

5.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) were submitted and found to be complete:

B07Q52 B07Q63

5.2 HOLDING TIMES

Analytical holding times for ICP metals, GFAA metals, and CVAA mercury analyses were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: samples must be analyzed within twenty-eight days for mercury, 14 days for cyanide, and within six months for all other metals.

All holding time requirements for all analytes in all data packages were met for this report.

5.3 INSTRUMENT PERFORMANCE AND CALIBRATIONS

Performance of specific instrument quality assurance and quality control procedures, including deficiencies noted during the quality assurance review, are outlined below.

Three calibration standards and a blank were analyzed for arsenic, selenium, thallium, and lead by GFAA. The correlation coefficient of a least squares linear regression met the requirements for calibration in all cases.

Up to five calibration standards and a blank were analyzed for mercury by CVAA. The correlation coefficient of a least squares linear regression met the requirements for calibration.

At least one standard and a blank were analyzed by ICP for all other elements.

The above calibrations were each immediately verified with an ICV standard and a calibration blank. The ICV was prepared from a source independent of the calibration standards, at a mid-calibration range concentration. The ICV percent recovery must fall within the control limits of 90 to 110 percent for metals analyzed by ICP and GFAA, and 80 to 120 percent for

mercury. Calibration linearity near the detection limit was verified with a standard prepared at a concentration near the CRDL.

The ICVs met the recommended control limits for all cases.

The calibrations were subsequently verified at regular intervals using a CCV standard. The control windows for percent recovery of CCV standards are the same as the ICV windows described above.

The CCVs met the recommended control limits in all cases.

5.3.1 ICP Calibration

An ICS was analyzed at the beginning and end of each ICP sample run to verify the laboratory interelement and background correction factors. Results for the ICS solution must fall within the control limit of ±20 percent of the true value.

A five-fold serial dilution is required for all elements analyzed by ICP. The subsequent concentrations of the reanalysis are compared with the original analysis. If the analyte concentration is sufficiently high (a minimum factor of 50 above the IDL) then the serial dilution must agree within 10% of the original determination after correction for dilution.

The ICS has been analyzed at the proper frequency and all ICSAB solution percent recovery values fell within the control limit.

5.3.2 Atomic Absorption Calibrations

Duplicate injections are required for all GFAA analyses. The duplicate injections establish the precision of the individual analytical determinations. For sample concentrations greater than the CRDL, duplicate injections must agree within ±20 percent RSD.

All duplicate injection quality control requirements were acceptable.

5.3.3 Cyanide Analysis Calibrations

Cyanide analysis was performed by mid-distillation under Method 335.2 CLP-M (semi-automated spectrophotometric). The detection limit for the semi-automated colorimetric method is approximately 10 ug/L.

The cyanide as hydrocyanic acid (HCN) is released from cyanide complexes by means of mid-reflux-distillation operation and absorbed in a scrubber containing sodium hydroxide solution. The cyanide ion in the absorbing solution is then determined colorimetrically.

All results fell within the acceptable limits.

5.4 BLANKS

Samples with digestate concentrations (in ug/L) of less than five times (<5x) the highest amount found in any of the associated blanks have had their associated values qualified as non-detected (U). Samples with concentrations of greater than five times (>5x) the highest amount found in any of the associated blanks do not require qualification.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for antimony:

- Sample numbers B07Q52, B07Q53, B07Q55, B07Q56, B07Q57, B07Q58, B07Q59, B07Q60, B07Q61 and B07Q62 in SDG No. B07Q52.
- Sample numbers B07Q63, B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72 and B07Q73 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for barium:

- Sample number B07Q55 in SDG No. B07Q52.
- Sample number B07Q63 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for beryllium:

- Sample numbers B07Q52, B07Q53, B07Q55, B07Q56, B07Q57, B07Q58, B07Q59, B07Q60, B07Q61 and B07Q62 in SDG No. B07Q52.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for cadmium:

- Sample numbers B07Q63, B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72 and B07Q73 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for calcium:

- Sample number B07Q55 in SDG No. B07Q52.
- Sample number B07Q63 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for chromium:

- Sample numbers B07Q52, B07Q53, B07Q55, B07Q56, B07Q57, B07Q58, B07Q59, B07Q60, B07Q61 and B07Q62 in SDG No. B07Q52.
- Sample numbers B07Q63, B07Q64, B07Q67, B07Q68 and B07Q73 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for copper:

- Sample number B07Q55 in SDG No. B07Q52.
- Sample numbers B07Q63, B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72 and B07Q73 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for manganese:

- Sample number B07Q55 in SDG No. B07Q52.
- Sample number B07Q63 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for potassium:

- Sample number B07Q55 in SDG No. B07Q52.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for silver:

- Sample numbers B07Q52, B07Q53, B07Q55, B07Q56, B07Q57, B07Q58, B07Q59, B07Q60, B07Q61 and B07Q62 in SDG No. B07Q52.
- Sample numbers B07Q63, B07Q64, B07Q65, B07Q66, B07Q67, B07Q68, B07Q69, B07Q71, B07Q72 and B07Q73 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for sodium:

- Sample number B07Q55 in SDG No. B07Q52.
- Sample numbers B07Q63, B07Q68 and B07Q69 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for thallium:

- Sample numbers B07Q52, B07Q53, B07Q55, B07Q56, B07Q57, B07Q58, B07Q59, B07Q60, B07Q61 and B07Q62 in SDG No. B07Q52.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for vanadium:

- Sample numbers B07Q63 and B07Q68 in SDG No. B07Q63.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for zinc:

- Sample number B07Q55 in SDG No. B07Q52.
- Sample numbers B07Q63, B07Q68 and B07Q69 in SDG No. B07Q63.

All other laboratory blank results were acceptable.

5.5 ACCURACY

5.5.1 Matrix Spike Recovery

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must generally fall within the range of 75 to 125 percent. Results which fall outside the QC range are qualified as estimates and flagged "J". Samples with a spike recovery of less than 30% and a sample value below the IDL were rejected and flagged "R".

Matrix spike recoveries fell outside the quality control requirement for antimony in SDG Nos. B07Q52 and B07Q63.

Matrix spike recoveries fell outside the quality control requirement for manganese in SDG No. B07Q52.

Matrix spike recoveries fell outside the quality control requirement for selenium in SDG Nos. B07Q52 and B07Q63.

Matrix spike recoveries fell outside the quality control requirement for cyanide in SDG No. B07Q52.

All other matrix spike recovery results were acceptable.

5.5.2 Laboratory Control Sample Recovery

The LCS monitors the overall performance of the analysis, including the sample preparation. An LCS should be digested or distilled and analyzed with every group of samples which have been prepared together. The performance criteria for solid LCS samples are established through interlaboratory studies coordinated by a certifying agency (e.g., EPA or an independent commercial supplier).

One solid LCS was digested and analyzed for each of the cases in this report that contained soil samples. The results were compared against the established control limits as required by the USEPA CLP SOW 7/88 and 3/90 protocols.

All results were found to be acceptable.

5.6 PRECISION

5.6.1 Laboratory Duplicate Samples

The laboratory duplicate results measures the precision of the method by measuring a second aliquot of the sample that is treated the same way as the original. Samples whose precision fell outside the quality control requirements were qualified as estimates and flagged "J".

The laboratory duplicate results fell outside the established QC limits for calcium in SDG No. B07Q52.

The laboratory duplicate results fell outside the established QC limits for lead in SDG No. B07Q63.

The laboratory duplicate results fell outside the established QC limits for manganese in SDG No. B07Q52.

The laboratory duplicate results fell outside the established QC limits for zinc in SDG No. B07Q52.

All other laboratory duplicate recovery results were acceptable.

5.6.2 ICP Serial Dilution

The ICP serial dilution is used to determine whether significant physical or chemical interferences exist due to sample matrix. If sample concentration is $\geq$ 50 times the IDL for an analyte and the %D is outside the control limits the associated data must be qualified as estimates "J".

The ICP serial dilution results fell outside the established QC limits for barium in SDG No. B07Q63.

The ICP serial dilution results fell outside the established QC limits for zinc in SDG No. B07Q52.

All other ICP serial dilution results were acceptable.

5.7 FURNACE AA QUALITY CONTROL

The post-digestion analytical spike is analyzed to determine the extent of interference in the digestate matrix. When the results of the analytical spike analyses exceeds the control window of 85 to 115 percent recovery and the absorbance of the sample is greater than fifty percent of the analytical spike absorbance, then the sample must be reanalyzed using the MSA. The duplicate injections and the analytical spike recoveries establish the precision and accuracy of the individual GFAA determinations.

5.7.1 Duplicate Injections

Duplicate injection results fell outside the quality control limit for selenium. The associated results were qualified as estimates and flagged "J":

- Sample number B07Q73 in SDG No. B07Q63.

All other duplicate injection quality control requirements were met.

5.7.2 Analytical Spike Recoveries

For all samples whose analytical spike results were outside the 85 to 115 percent control limit, but whose absorbances are less than 50 percent of the analytical spike absorbance, the samples were flagged as estimates "J".

The analytical spike recovery fell outside the established QC limits for arsenic:

- Sample numbers B07Q52 and B07Q53 in SDG No. B07Q52.

The analytical spike recovery fell outside the established QC limits for selenium:

- Sample numbers B07Q52, B07Q53, B07Q55, B07Q56, B07Q57, B07Q58 and B07Q62 in SDG No. B07Q52.
- Sample numbers B07Q71, B07Q72 and B07Q73 in SDG No. B07Q63.

The analytical spike recovery fell outside the established QC limits for thallium:

- Sample numbers B07Q56 and B07Q62 in SDG No. B07Q52.
- Sample number B07Q73 in SDG No. B07Q63.

All other analytical spike recovery results were acceptable.

5.8 ANALYTE QUANTITATION AND DETECTION LIMITS

Twenty percent of sample results and reported detection limits were recalculated to ensure that the reported results were accurate. Raw data were examined for anomalies, transcription errors, and reduction errors.

The reviewer verified that the results and detection limits fell within the linear range of the instrument.

5.9 OVERALL ASSESSMENT AND SUMMARY

All samples were analyzed and reported under the 1990 CLP protocol (EPA 1990). Several inconsistencies and deviations from the protocol were observed. They are as follows:

CCV and CCB must be analyzed immediately after the ICV and ICB. ICAP, Mercury and Cyanide do not follow this protocol. For ICAP analysis a CCV and CCB were run after the initial interference checks and CRI. This is incorrect since the ICSA/AB and CRII are considered analytical samples and according to the CLP protocol a CCV and CCB must be run prior to any analytical samples. For mercury and cyanide the CCV and CCB were analyzed for after the first ten samples. Refer to Sections E-11 paragraph 2b and E-12 paragraph 4a of the USEPA CLP SOW 3/90 protocol.

Internal chain of custodies are insufficient. Interdepartmental transfers are not shown (i.e., from the sample custodian to metals department, etc.). Refer to Sections F-2 paragraph 1.2 and F-3 paragraph 1.4 of the USEPA CLP SOW 3/90.

The mercury ICV appears to have been analyzed at a 2X dilution. Result which appears on Form 2A is exactly 2 times the result found in the raw data, however, this is not indicated on the raw data. Laboratory must verify results and properly label raw data with the correct dilution factor.

All other data are usable for all purposes.

INORGANIC ANALYSIS, SOIL MATRIX, (mg/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q52																				
Sample Number		B07Q52		B07Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks				DUP		EB															
Sample Date		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92		12/09/92	
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	200	4330	J	5520	J	61.3		3980		4610		4610		3270		3110		3300		3280	
Antimony	60	4.4	UJ	4.1	UJ	3.7	UJ	3.9	UJ	4.2	UJ	4	UJ	4	UJ	3.7	UJ	3.9	UJ	4	UJ
Arsenic	10	1.2	J	1.7	J	0.73	U	0.9		1.2		0.93		0.75		0.73	U	0.76	U	0.74	J
Barium	200	83.2		93.7		0.47	U	41.9		75.5		67		55.1		44.2		39.4		43.4	
Beryllium	5	0.21	U	0.19	U	0.17	U	0.18	U	0.2	U	0.19	U	0.19	U	0.17	U	0.19	U	0.19	U
Cadmium	5	0.32	U	0.3	U	0.27	U	0.28	U	0.31	U	0.29	U	0.3	U	0.27	U	0.29	U	0.29	U
Calcium	5000	6720	J	9170	J	34.2	UJ	4420	J	5490	J	4940	J	3320	J	3990	J	4270	J	4460	J
Chromium	10	5.9	U	8.4	U	0.82	U	2.7	U	5.5	U	5.6	U	2.4	U	1.4	U	1.4	U	1.3	U
Cobalt	50	9.8		10.7		0.62	U	8.8		11.2		13.4		10.2		8.8		10		10	
Copper	25	27.8		28.7		3.7	U	18.5		20		18.2		11.3		14.6		17.1		15.2	
Iron	100	20400		23800		247		23100		24600		29500		23000		23500		23600		19100	
Lead	3	4	J	5.5	J	0.29	U	2.8		4.1		2.7		2.6		1.9		1.5		2.2	
Magnesium	5000	3950	J	5320	J	12.8	U	2880		3400		4260		2330		3410		3430		2730	
Manganese	15	180	J	227	J	0.52	UJ	186	J	219	J	275	J	167	J	169	J	197	J	174	J
Mercury	0.2	0.14	J	0.37	J	0.05	U	0.07		0.15		0.12		0.19		0.06		0.06		0.06	
Nickel	40	7.7		8.2		1	U	3.8		5.8		5.8		3.9		5.1		4.2		4.7	
Potassium	5000	305		427		24.1	U	327		376		409		296		351		249		236	
Selenium	5	0.76	UJ	0.69	UJ	0.67	J	0.7	UJ	0.72	UJ	0.67	UJ	0.67	UJ	0.65	UJ	0.68	UJ	0.66	UJ
Silver	10	1.1	U	0.99	U	0.89	U	0.93		1	U	0.96	U	0.97	U	0.89	U	0.95	U	1	U
Sodium	5000	268		320		24.4	U	508		442		516		522		523		474		458	
Thallium	10	0.44	U	0.4	U	0.37	U	0.4	UJ	0.42	U	0.39	U	0.39	U	0.37	U	0.39	U	0.38	UJ
Vanadium	50	56.6		61.2		0.78	U	47.3		69.4		70		66.1		43.8		46.9		37.3	
Zinc	20	76.1	J	94.4	J	3.5	UJ	42.2	J	77.4	J	57.4	J	41.6	J	36.2	J	41.2	J	39.4	J
Cyanide	10	0.61	UJ	0.55	UJ	0.47	U	0.52	UJ	0.57	UJ	0.51	UJ	0.5	UJ	0.52	UJ	0.51	UJ	0.5	UJ

DUP = Duplicate, EB = Equipment Blank

BLANK AND SAMPLE DATA SUMMARY

SDG: B07Q52	REVIEWER: LM			DATE: 4/20/93				PAGE 1 OF 1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
ICB	Antimony	24.4			ug/L	122.0	244.0	All	U
CCB	Barium	3.1			ug/L	15.5	31.0	B07Q55	U
CCB	Beryllium	2.8			ug/L	14.0	28.0	All	U
PBS	Calcium	67.8			ug/L	349.0	678.0	B07Q55	U
CCB	Chromium	-8.4			ug/L	-42.0	-84.0	All	U
PBS	Copper	6.0			ug/L	30.0	60.0	B07Q55	U
CCB	Manganese	2.0			ug/L	10.0	20.0	B07Q55	U
CCB	Potassium	-213.3			ug/L	1066.0	2133.0	B07Q55	U
CCB	Silver	5.2			ug/L	26.0	52.0	All	U
PBS	Sodium	86.6			ug/L	433	866.0	B07Q55	U
CCB	Thallium	-2.4			ug/L	-12.0	-24.0	All	U
PBS	Zinc	16.4			ug/L	82.0	164.0	B07Q55	U

ACCURACY DATA SUMMARY

SDG: B07Q52	REVIEWER: LM	DATE: 4/20/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B07Q62S	Antimony	71.7	All	J
B07Q62S	Manganese	52.9	All	J
B07Q62S	Selenium	41.2	All	J
B07Q62S	Cyanide	73.2	All	J
B07Q52A	Arsenic	83.2	B07Q52	J
B07Q53A	Arsenic	84.3	B07Q53	J
B07Q52A	Selenium	79.9	B07Q52	J
B07Q53A	Selenium	80.6	B07Q53	J
B07Q55A	Selenium	71.8	B07Q55	J
B07Q56A	Selenium	49.9	B07Q56	J
B07Q57A	Selenium	78.0	B07Q57	J
B07Q58A	Selenium	81.9	B07Q58	J
B07Q62A	Selenium	60.3	B07Q62	J
B07Q56A	Thallium	76.6	B07Q56	J
B07Q62A	Thallium	82.7	B07Q62	J

PRECISION DATA SUMMARY

SDG: B07Q52	REVIEWER: LM	DATE: 4/20/93	PAGE_1_OF_1_
COMMENTS:			

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Calcium	B07Q62	B07Q62D	31.5	All	J
Manganese	B07Q62	B07Q62D	26.0	All	J
Zinc	B07Q62	B07Q62D	21.4	All	J
Zinc	B07Q62	B07Q62L	13.6	All	J
Aluminum	B07Q52	B07Q53	24.1	B07Q52, B07Q53	J
Calcium	B07Q52	B07Q53	30.1	B07Q52, B07Q53	J
Lead	B07Q52	B07Q53	31.5	B07Q52, B07Q53	J
Magnesium	B07Q52	B07Q53	29.5	B07Q52, B07Q53	J
Manganese	B07Q52	B07Q53	23.1	B07Q52, B07Q53	J
Mercury	B07Q52	B07Q53	90.2	B07Q52, B07Q53	J
Zinc	B07Q52	B07Q53	21.5	B07Q52, B07Q53	J

DATA QUALIFICATION SUMMARY

SDG: B07Q52	REVIEWER: LM	DATE: 4/20/93	PAGE 1 OF 2
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	U	All	Lab. Blank
Barium	U	B07Q55	Lab. Blank
Beryllium	U	All	Lab. Blank
Calcium	U	B07Q55	Lab. Blank
Chromium	U	All	Lab. Blank
Copper	U	B07Q55	Lab. Blank
Manganese	U	B07Q55	Lab. Blank
Potassium	U	B07Q55	Lab. Blank
Silver	U	All	Lab. Blank
Sodium	U	B07Q55	Lab. Blank
Thallium	U	All	Lab. Blank
Zinc	U	B07Q55	Lab. Blank
Antimony	J	All	Matrix Spike
Manganese	J	All	Matrix Spike
Selenium	J	All	Matrix Spike
Cyanide	J	All	Matrix Spike
Arsenic	J	B07Q52, B07Q53	GFAA Analytical Spike
Selenium	J	B07Q52, B07Q53, B07Q55, B07Q56, B07Q57, B07Q58, B07Q62	GFAA Analytical Spike
Thallium	J	B07Q56, B07Q62	GFAA Analytical Spike
Calcium	J	All	Dup. RPD
Manganese	J	All	Dup. RPD
Zinc	J	All	Dup. RPD/ICP Serial Dilution
Aluminum	J	B07152, B07Q53	Field Duplicate RPD
Calcium	J	B07Q52, B07Q53	Field Duplicate RPD
Lead	J	B07Q52, B07Q53	Field Duplicate RPD

DATA QUALIFICATION SUMMARY

SDG: B07Q52	REVIEWER: LM	DATE: 4/20/93	PAGE 2 OF 2
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Magnesium	J	B07Q52, B07Q53	Field Duplicate RPD
Manganese	J	B07Q52, B07Q53	Field Duplicate RPD
Mercury	J	B07Q52, B07Q53	Field Duplicate RPD
Zinc	J	B07Q52, B07Q53	Field Duplicate RPD

INORGANIC ANALYSIS, SOIL MATRIX, (mg/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B07Q63																				
Sample Number		B07Q63		B07Q64		B07Q65		B07Q66		B07Q67		B07Q68		B07Q69		B07Q71		B07Q72		B07Q73	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks		EB																Duplicate			
Sample Date		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93	
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	200	47.5		2570		4760		5210		3170		2730		3650		4360	J	3500	J	4130	
Antimony	60	3.8	UJ	3.7	UJ	4.2	UJ	3.8	UJ	3.6	UJ	3.6	UJ	3.9	UJ	3.8	UJ	3.9	UJ	4.3	UJ
Arsenic	10	0.66		0.84		1.5		1.4		0.97		0.76		0.79		2.1		0.89		0.72	
Barium	200	0.60	UJ	50.8	J	38.7	J	51.0	J	43.1	J	30.3	J	27.4	J	37.2	J	54.5	J	32.3	J
Beryllium	5	0.18	U	0.17	U	0.20	U	0.18	U	0.17	U	0.17	U	0.18	U	0.18	U	0.19	U	0.20	U
Cadmium	5	0.28	U	0.27	U	0.31	U	0.28	U	0.27	U	0.27	U	0.29	U	0.28	U	0.29	U	0.31	U
Calcium	5000	13.1	U	3930		2060		2030		4410		1080		1220		1960		2400		1880	
Chromium	10	0.84	U	2.3	U	10.7		12.2		3.4	U	4.9		7.7		9.3		6.2		5.8	U
Cobalt	50	0.64	U	7.8		4.8		5.5		9.2		2.7		6.2		6.4		6.6		6.5	
Copper	25	7.1	U	19.1	J	18.0	U	17.5	U	16.7	U	8.8	U	9.5	U	16.2	U	13.1	U	13.1	U
Iron	100	189		19200		11700		12200		22000		4650		5260		10500	J	13900	J	8840	
Lead	3	0.49	J	1.9	J	2.0	J	2.4	J	2.3	J	2.0	J	2.1	J	2.0	J	2.5	J	2.2	J
Magnesium	5000	13.2	U	2730		3620		4160		3270		1720		1950		3120		2850		2240	
Manganese	15	0.76	U	165		169		186		184		113		193		189		187		217	
Mercury	0.2	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.06	U
Nickel	40	1.1	U	3.6		11.8		11.8		4.2		8.0		8.9		10.2		8.1		9.4	
Potassium	5000	24.9	U	213		427		909		302		413		560		552		388		469	
Selenium	5	0.72	UJ	0.78	UJ	0.92	UJ	0.74	UJ	0.77	UJ	0.73	UJ	0.75	UJ	0.79	UJ	0.80	UJ	0.83	UJ
Silver	10	0.92	U	0.89	U	1.0	U	0.92		0.88	U	0.87	U	0.94	U	0.93	U	0.95	U	1.0	
Sodium	5000	19.6	U	345		194		237		497		123	U	121	U	234		270		216	
Thallium	10	0.49	U	0.54	U	0.63	U	0.50	U	0.53	U	0.50	U	0.52	U	0.54	U	0.55	U	0.57	UJ
Vanadium	50	0.80	U	36.4		24.5		24.7		47.2		8.5	U	10.4		21.7	J	28.2	J	16.1	
Zinc	20	3.2	U	32.3		28.0		30.1		36.6		15.5	U	17.5	U	27.7	J	27.8	J	24.1	
Cyanide	10	0.51	U	0.52	U	0.62	U	0.51	U	0.50	U	0.48	U	0.49	U	0.52	U	0.50	U	0.55	U

EB = Equipment Blank

BLANK AND SAMPLE DATA SUMMARY

SDG: B07Q63	REVIEWER: LM			DATE: 4/21/93				PAGE 1 OF 1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB	Antimony	27.4			ug/L	137.0	274.0	All	U
CCB	Barium	9.0			ug/L	45.0	90.0	B07Q63	U
CCB	Cadmium	2.8			ug/L	14.0	28.0	All	U
PBS	Calcium	79.2			ug/L	396.0	792.0	B07Q63	U
CCB	Chromium	5.5			ug/L	27.5	55.0	B07Q63, B07Q64, B07Q67, B07Q68, B07Q73	U
CCB	Copper	22.9			ug/L	114.5	229.0	All	U
CCB	Manganese	3.2			ug/L	16.0	32.0	B07Q63	U
CCB	Silver	6.3			ug/L	31.5	63.0	All	U
PBS	Sodium	138.4			ug/L	692.0	1384	B07Q63, B07Q68, B07Q69	U
CCB	Vanadium	9.0			ug/L	45.0	90.0	B07Q63, B07Q68	U
PBS	Zinc	17.4			ug/L	87.0	174.0	B07Q63, B07Q68, B07Q69	U

ACCURACY DATA SUMMARY

SDG: B07Q63	REVIEWER: LM	DATE: 4/21/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B07Q73S	Antimony	70.8	All	J
B07Q73S	Selenium	64.4	All	J
B07Q71A	Selenium	69.6	B07Q71	J
B07Q72A	Selenium	80.2	B07Q72	J
B07Q73A	Selenium	80.4	B07Q73	J
B07Q73A	Thallium	79.6	B07Q73	J

PRECISION DATA SUMMARY

SDG: B07Q63	REVIEWER: LM	DATE: 4/21/93	PAGE 1 OF 1		
COMMENTS:					
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Lead	B07Q73	B07Q73D	40.7	All	J
Barium	B07Q73	B07Q73L	19.8	All	J
Aluminum	B07Q71	B07Q72	21.9	B07Q71, B07Q72	J
Iron	B07Q71	B07Q72	66.5	B07Q71, B07Q72	J
Vanadium	B07Q71	B07Q72	70.4	B07Q71, B07Q72	J
Zinc	B07Q71	B07Q72	200.0	B07Q71, B07Q72	J

DATA QUALIFICATION SUMMARY

SDG: B07Q63	REVIEWER: LM	DATE: 4/21/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	U	All	Lab. Blank
Barium	U	B07Q63	Lab. Blank
Cadmium	U	All	Lab. Blank
Calcium	U	B07Q63	Lab. Blank
Chromium	U	B07Q63, B07Q64, B07Q67, B07Q68, B07Q73	Lab. Blank
Copper	U	All	Lab. Blank
Manganese	U	B07Q63	Lab. Blank
Silver	U	All	Lab. Blank
Sodium	U	B07Q63, B07Q68, B07Q69	Lab. Blank
Vanadium	U	B07Q63, B07Q68	Lab. Blank
Zinc	U	B07Q63, B07Q68, B07Q69	Lab. Blank
Antimony	J	All	Matrix Spike
Selenium	J	All	Matrix Spike
Selenium	J	B07Q71, B07Q72, B07Q7	GFAA analytical spike
Thallium	J	B07Q73	GFAa analytical spike
Lead	J	All	Duplicate RPD
Barium	J	All	ICP serial dilution
Selenium	J	B07Q73	CV > 20%
Aluminum	J	B07Q71, B07Q73	Field duplicate RPD
Iron	J	B07Q71, B07Q73	Field duplicate RPD
Vanadium	J	B07Q71, B07Q73	Field duplicate RPD
Zinc	J	B07Q71, B07Q73	Field duplicate RPD

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WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	WET CHEMISTRY
120-N-1	B07Q52	S	12/09/92	6-4
	B07Q53	S	12/09/92	6-4
	B07Q54	S	12/09/92	6-4
	B07Q55	S	12/09/92	6-4
	B07Q56	S	12/09/92	6-4
	B07Q57	S	12/09/92	6-4
	B07Q58	S	12/09/92	6-4
	B07Q59	S	12/09/92	6-4
	B07Q60	S	12/09/92	6-4
	B07Q61	S	12/09/92	6-4
	B07Q62	S	12/09/92	6-4
	B07Q63	S	12/18/92	6-8
	B07Q64	S	12/18/92	6-8
	B07Q65	S	12/18/92	6-8
	B07Q66	S	12/18/92	6-8
	B07Q67	S	12/18/92	6-8
	B07Q68	S	12/18/92	6-8
	B07Q69	S	12/18/92	6-8
	B07Q70	S	12/18/92	6-8
	B07Q71	S	12/18/92	6-8
	B07Q72	S	12/18/92	6-8
	B07Q73	S	12/18/92	6-8

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6.0 WET CHEMISTRY DATA VALIDATION

6.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) data packages were submitted and reviewed for completeness:

B07Q52 B07Q63

6.2 HOLDING TIMES

Analytical holding times for nitrate, nitrite, fluoride, chloride, phosphate, sulfate, pH and conductivity, TDS, TOC, TOX, COD, sulfide, ammonia-nitrogen and alkalinity were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: twenty-eight days for nitrate, nitrite, fluoride, chloride, phosphate, sulfate, ammonia-nitrogen, TOC and COD samples, 14 days for alkalinity, seven days for TDS, TOX and sulfide samples, 48 hours for nitrate, nitrite, phosphate, and conductivity samples and 72 hours for pH samples under the USEPA SW-846 protocol.

Holding times were exceeded for fluoride in SDG No. B07Q63. All associated sample results were qualified as estimates and flagged "J".

Holding times were exceeded for sulfate in SDG No. B07Q63. All associated sample results were qualified as estimates and flagged "J".

Holding times were exceeded for pH in SDG No. B07Q63. All associated sample results were qualified as estimates and flagged "J".

Holding times were grossly exceeded for pH in SDG No. B07Q52. All associated sample results were rejected and flagged "R".

Holding times for all other analytes met QC requirements.

6.3 CALIBRATIONS

All associated instruments were calibrated using the proper standards and procedures.

6.3.1 Initial Calibration

The following calibration procedures must be conducted:

- At least a blank and three standards were used to establish the ion chromatography, ion selective electrode, spectrophotometer, TOC analyzer and TOX analyzer calibrations prior to sample analysis and the correlation was $\geq$0.995.
- The titrant normality for alkalinity analysis was checked.

All other initial calibration results were acceptable, however, ICV summary forms were not submitted for either data package.

6.3.2 Continuing Calibration Verification

All CCV standards must be analyzed with the required frequency or every 20 samples. The percent recoveries must fall within the 90-110% acceptance windows.

Insufficient instrument calibration verification data (CCVs and CCBs) were provided for fluoride and sulfate analyses in SDG Nos. B07Q52 and B07Q63. All associated results were qualified as estimates and flagged "J".

6.4 BLANKS

One laboratory preparation blank is analyzed at a frequency of one every 20 samples. All blank results must fall below the CRQL and if not, all associated data <5 times the amount found in the blank is qualified as non-detected "U".

All laboratory blank results were acceptable.

6.5 ACCURACY

6.5.1 Matrix Spike Recovery

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations.

All matrix spike results were acceptable.

6.5.2 Laboratory Control Sample Recovery

The LCS monitors the overall performance of the analysis, including the sample preparation. An LCS should be prepared (e.g., digested or distilled) and analyzed with every group of samples which have been prepared together. The performance criteria for aqueous LCS percent recovery is 80 to 120 percent. The performance criteria for solid LCS samples are established through interlaboratory studies coordinated by a certifying agency (e.g., EPA or an independent commercial supplier).

ICV results obtained from the raw data were used to calculate LCS results. All LCS results were found to be acceptable.

6.6 PRECISION

Analytical duplicate sample analyses are used to measure laboratory precision and sample homogeneity. Field duplicate analyses are used to measure both the laboratory and the field sampling procedure precision.

All duplicate analyses results were acceptable for this report.

6.7 ANALYTE QUANTITATION AND DETECTION LIMITS

Sample results and reported detection limits were recalculated to ensure that the reported results were accurate. Raw data were examined for anomalies, transcription errors, and reduction errors. In addition, the reviewer verified that the results fell within the linear range of the instrument.

6.8 OVERALL ASSESSMENT AND SUMMARY

A review of instrument continuing calibration information and QC data indicate that instrument performance was adequate for these analyses. The holding times for fluoride and sulfate exceeded the requirements. All results in one data package were qualified as estimates and flagged "J". The holding times for pH were grossly exceeded and the associated results were rejected and flagged "R". The results for fluoride and sulfate were also flagged as estimates due to insufficient calibration data. The laboratory did not provide any continuing calibration verification (CCV) or continuing calibration blank (CCB) data for fluoride and sulfate analyses in both data packages. Without this information, it cannot be determined whether or not the instrument remained calibrated and the results accurate. Aside from lack of data and the QC problems mentioned above, all other results are usable for all purposes.

WET CHEMISTRY/ANIONS ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE - HANFORD																			
Laboratory: TMA																			
Case	SDG: B07Q52																		
Sample Number		B07Q52		B0Q53		B07Q55		B07Q56		B07Q57		B07Q58		B07Q59		B07Q60		B07Q61		B07Q62	
Location																			
Remarks				DUP		EB													
Sample Date		12/9/92		12/9/92		12/9/92		12/9/92		12/9/92		12/9/92		12/9/92		12/9/92		12/9/92		12/9/92	
Analytes	Method	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fluoride	300	0.8	J	0.7	J	0.5	J	2.7	J	1.4	J	3.2	J	1.8	J	1.1	J	0.3	J	0.8	J
Sulfate	300	61	J	23	J	5	J	21	J	135	J	72	J	25	J	43	J	85	J	62	J
pH (pH units)	9045	8.8	R	9	R	8.7	R	7.8	R	8.6	R	7.7	R	7.1	R	6.5	R	5.8	R	6	R
N02N03		2.51	UJ	8	J	2.49	U	2.53	U	2.55	U	2.6	U	2.49	U	2.53	U	2.51	U	2.8	U

= Equipment Blank

HOLDING TIME SUMMARY

SDG: B07Q52	REVIEWER: LM			DATE: 4/20/93		PAGE 1 OF 1	
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q52	pH	12/9/92		12/18/92		2 days	R
B07Q53	pH	12/9/92		12/18/92		2 days	R
B07Q55	pH	12/9/92		12/18/92		2 days	R
B07Q56	pH	12/9/92		12/23/92		2 days	R
B07Q57	pH	12/9/92		12/18/92		2 days	R
B07Q58	pH	12/9/92		12/18/92		2 days	R
B07Q59	pH	12/9/92		12/23/92		2 days	R
B07Q60	pH	12/9/92		12/18/92		2 days	R
B07Q61	pH	12/9/92		12/18/92		2 days	R
B07162	pH	12/9/92		12/18/92		2 days	R

PRECISION DATA SUMMARY

SDG: B07Q52	REVIEWER: LM	DATE: 4/20/93	PAGE 1 OF 1		
COMMENTS:					
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Sulfate	B07Q52	B07Q53	90.4	B07Q52, B07Q53	J
N02N03	B07Q52	B07Q53	200.0	B07Q52, B07Q53	J

DATA QUALIFICATION SUMMARY

SDG: B07Q52	REVIEWER: LM	DATE: 4/20/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Fluoride	J	All	Insufficient CCV/CCB Data Provided
Sulfate	J	All	Insufficient CCV/CCB Data Provided
pH	R	All	Holding Time Grossly Exceeded
Sulfate	J	B07Q52, B07Q53	Field Duplicate RPD
N02N03	J	B07Q52, B07Q53	Field Duplicate RPD

WET CHEMISTRY/ANIONS ANALYSIS, SOIL MATRIX, (mg/Kg)

Project: WESTINGHOUSE-HANFORD																			
Laboratory: TMA																			
Case	SDG: B07Q63																		
Sample Number		B07Q63		B07Q64		B07Q65		B07Q66		B07Q67		B07Q68		B07Q69		B07Q71		B07Q72		B07Q73	
Location		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1		120-N-1	
Remarks		EB																Duplicate			
Sample Date		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93		12/18/93	
Analytes	Method	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fluoride	300.0	0.3	J	0.3	J	1.0	J	1.2	J	0.7	J	1.1	J	1.0	J	0.6	J	0.6	J	1.3	J
Sulfate	300.0	4.0	J	62.0	J	27.0	J	29.0	J	48.0	J	17.0	J	51.0	J	45.0	J	41.0	J	38.0	J
pH (pH units)	9045	6.9	J	5.6	J	6.2	J	6.9	J	6.3	J	6.7	J	6.4	J	6.2	J	6.3	J	7.1	J
N03N02 (mg N/Kg)	353.3	2.48	U	2.51	U	2.42	U	2.42	U	2.47	U	2.49	U	2.41	U	255	U	2.48	U	2.43	U

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HOLDING TIME SUMMARY

SDG: B07Q63	REVIEWER: LM			DATE: 4/21/93		PAGE 1 OF 2	
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q63	Fluoride	12/18/92		2/3/93		28 days	J
B07Q64	Fluoride	12/18/92		2/3/93		28 days	J
B07Q65	Fluoride	12/18/92		2/3/93		28 days	J
B07Q66	Fluoride	12/18/92		2/3/93		28 days	J
B07Q67	Fluoride	12/18/92		2/3/93		28 days	J
B07Q68	Fluoride	12/18/92		2/3/93		28 days	J
B07Q69	Fluoride	12/18/92		2/3/93		28 days	J
B07Q71	Fluoride	12/18/92		2/3/93		28 days	J
B07Q72	Fluoride	12/18/92		2/3/93		28 days	J
B07Q73	Fluoride	12/18/92		2/3/93		28 days	J
B07Q63	Sulfate	12/18/92		2/3/93		28 days	J
B07Q64	Sulfate	12/18/92		2/3/93		28 days	J
B07Q65	Sulfate	12/18/92		2/3/93		28 days	J
B07Q66	Sulfate	12/18/92		2/3/93		28 days	J
B07Q67	Sulfate	12/18/92		2/3/93		28 days	J
B07Q68	Sulfate	12/18/92		2/3/93		28 days	J

HOLDING TIME SUMMARY

SDG: B07Q63	REVIEWER: LM			DATE: 4/21/93		PAGE 2 OF 2	
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q69	Sulfate	12/18/92		2/3/93		28 days	J
B07Q71	Sulfate	12/18/92		2/3/93		28 days	J
B07Q72	Sulfate	12/18/92		2/3/93		28 days	J
B07Q73	Sulfate	12/18/92		2/3/93		28 days	J
B07Q63	pH	12/18/92		12/23/93		2 days	J
B07Q64	pH	12/18/92		12/23/93		2 days	J
B07Q65	pH	12/18/92		12/23/93		2 days	J
B07Q66	pH	12/18/92		12/23/93		2 days	J
B07Q67	pH	12/18/92		12/23/93		2 days	J
B07Q68	pH	12/18/92		12/23/93		2 days	J
B07Q69	pH	12/18/92		12/23/93		2 days	J
B07Q71	pH	12/18/92		12/23/93		2 days	J
B07Q72	pH	12/18/92		12/23/93		2 days	J
B07Q73	pH	12/18/92		12/23/93		2 days	J

DATA QUALIFICATION SUMMARY

SDG: B07Q63	REVIEWER: LM	DATE: 4/21/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Fluoride	J	All	Insufficient CCV/CCB data provided
Sulfate	J	All	Insufficient CCV/CCB data provided
Fluoride	J	All	Holding time exceeded
Sulfate	J	All	Holding time exceeded
pH	J	All	Holding time exceeded

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